IMPORTANT

Before you remove the Wire-Seal, check the contents of this envelope with the listing on the front of the envelope. If any part is missing, your Howard W. Sams distributor will replace the entire PHOTOFACT set IF the Wire-Seal has not been damaged.

This PHOTOFACT Folder Set is

WIRE-SEALED FOR YOUR PROTECTION

to guarantee completeness of contents

DO NOT ACCEPT IF SEAL HAS BEEN BROKEN

TO OPEN ***JUST DO THIS:***

1

Take hold of the Set with both hands. Place your thumbs directly under the top wire-seal; then, divide the contents equally by putting your thumbs midway through the thickness of the Set. Now, pull the two sections apart at the top, firmly.

2

Repeat this process, pulling close to the wire-seal at the bottom, so that the set is now divided into two equal parts.

3

Continue this "pulling-apart" process with the section in which the wire-seals remain, dividing it in half.

4

Finally, remove the wire-seals left in the last section; this can easily be done with your fingernail or any sharp instrument.

Your "Safety-Sealed" PHOTOFACT Set is now ready for profit-making use . . .

IMPORTANT

Before you remove the Wire-Seal, check the contents of this envelope with the listing on the front of the envelope. If any part is missing, your Howard W. Sams distributor will replace the entire PHOTOFACT set IF the Wire-Seal has not been damaged.

The PHOTOFACT® Servicer

SET. 497 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ SEPT. 1960

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This Servicer provides you with essential data on other models or special equipment not covered in standard PHOTOFACT folders. The schematics and supplementary data included here will be of valuable help to you in servicing this equipment.

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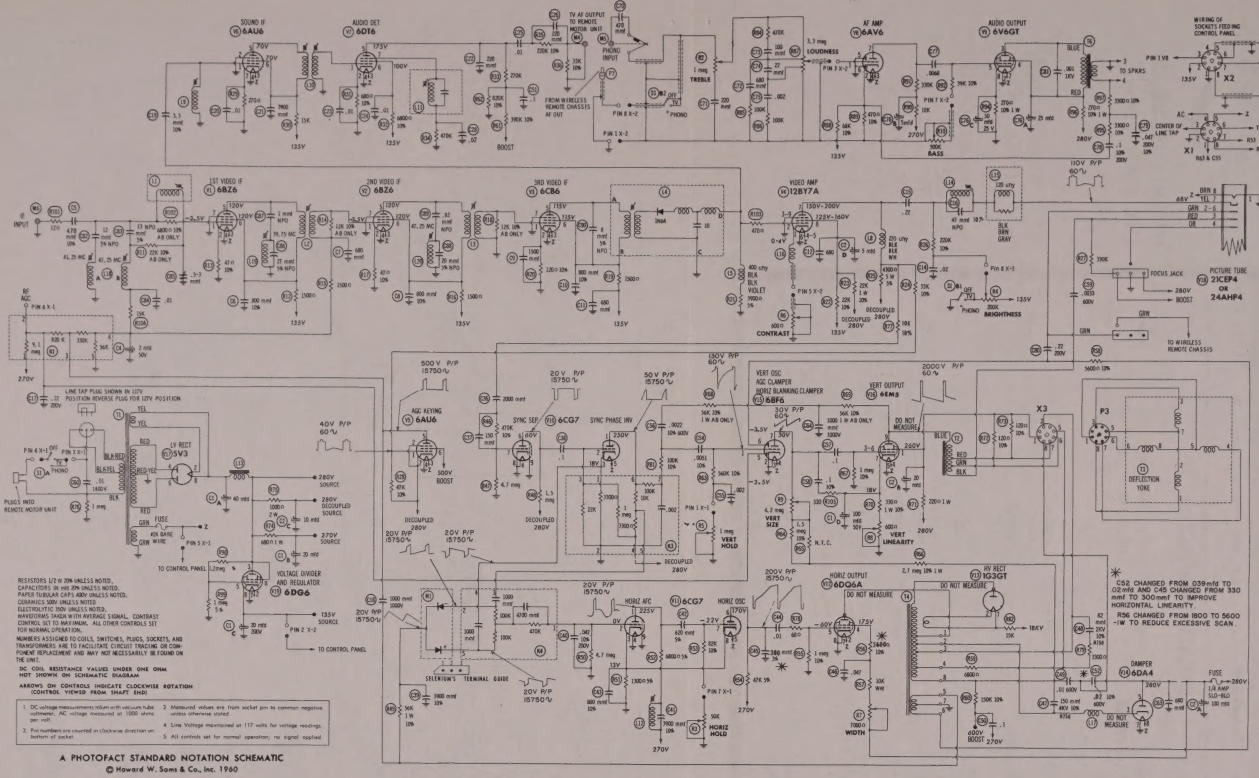
Capehart Model 15 (Ch. CR-48)

Magnavox Chassis U30-13-11, -12, U30-14-11, -12, V30-13-11, -12, V30-14-11, -12


SOUND IF V6 6AU6
AUDIO DET V7 6DT6
TV AF OUTPUT TO REMOTE MOTOR UNIT
PHONO INPUT
FROM WIRELESS REMOTE CHASSIS AF OUT
TREBLE
BOOST
AF AMP V8 6AV6
LOUDNESS
AUDIO OUTPUT V9 6V6GT
BASS
WIRING OF SOCKETS FEEDING CONTROL PANEL
PLUGS INTO WIRELESS REMOTE AUDIO OUTPUT RECEPTACLE
1ST VIDEO IF V1 6BZ6
2ND VIDEO IF V2 6BZ6
3RD VIDEO IF V3 6CB6
VIDEO AMP V4 12BY7A
CONTRAST
BRIGHTNESS
FOCUS JACK
PICTURE TUBE 21CEP4 OR 24AHP4
TO WIRELESS REMOTE CHASSIS
AGC KEYING V5 6AU6
SYNC SEP V10 6CG7
SYNC PHASE INV
VERT OSC AGC CLAMPER HORIZ BLANKING CLAMPER V5 6BF6
VERT OUTPUT V6 6EM5
VERT SIZE
VERT LINEARITY
K.T.C.
DEFLECTION YOKE
LINE TAP PLUG SHOWN IN 117V POSITION REVERSE PLUG FOR 105V POSITION
LV RECT V17 5V3
PLUGS INTO REMOTE MOTOR UNIT
FUSE
TO CONTROL PANEL
VOLTAGE DIVIDER AND REGULATOR V19 6DG6
HORIZ AFC V10 6CG7
HORIZ OSC
HORIZ HOLD
HORIZ OUTPUT V11 6DQ6A
HV RECT V13 1G3GT
DAMPER V19 6DA4
WIDTH
BOOST
FUSE 1.6A AMP SLO-BLO
SELECTRON'S TERMINAL GUIDE
C52 CHANGED FROM .039 mfd TO .02 mfd AND C45 CHANGED FROM 330 mmf TO 300 mmf TO IMPROVE HORIZONTAL LINEARITY.
R56 CHANGED FROM 1800 TO 5600 -1W TO REDUCE EXCESSIVE SCAN.
RESISTORS 1/2 W 20% UNLESS NOTED.
CAPACITORS IN mfd 20% UNLESS NOTED.
PAPER TUBULAR CAPS 400V UNLESS NOTED.
CERAMICS 500V UNLESS NOTED.
ELECTROLYTIC 350V UNLESS NOTED.
WAVEFORMS TAKEN WITH AVERAGE SIGNAL. CONTRAST CONTROL SET TO MAXIMUM. ALL OTHER CONTROLS SET FOR NORMAL OPERATION.
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE LINE.
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
1. DC voltage measurements taken with vacuum tube voltmeter. AC voltage measured at 1000 ohms per volt.
2. Pin numbers are counted in clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line Voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation; no signal applied.
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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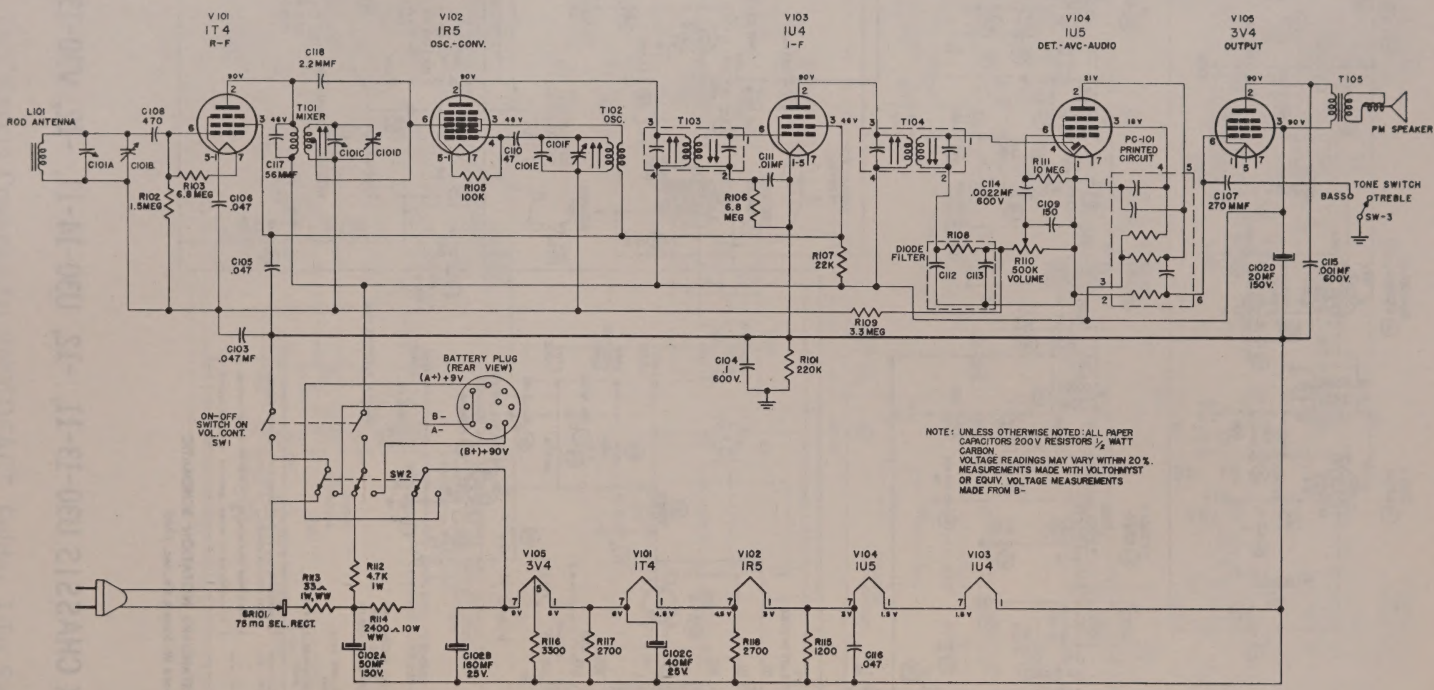
MAGNAVOX CHASSIS U30-13-11, -12, U30-14-11, -12, V30-13-11, -12, V30-14-11, -12

Similar To Chassis Covered In PHOTOFACT Folder 1 In Set 454



CAPEHART MODEL 15 (CH. CR-48)

Schematic Diagram Courtesy of Capehart-Farnsworth Corporation

PHOTOFACT® Folder with CIRCUITRACE®

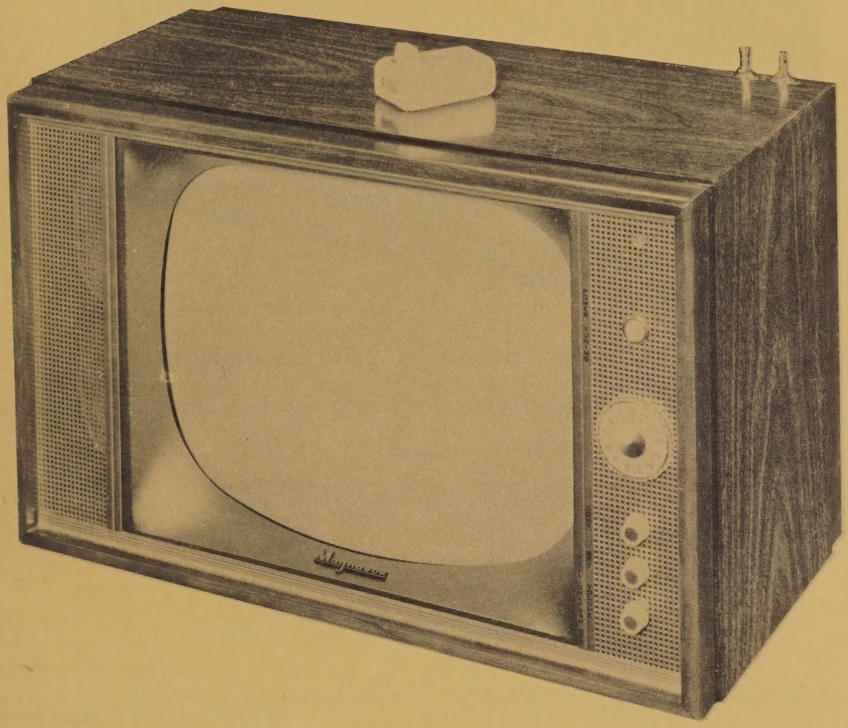
MAGNAVOX CHASSIS
V32-01-11, V32-02-11

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

MAGNAVOX CHASSIS
V32-01-11, V32-02-11



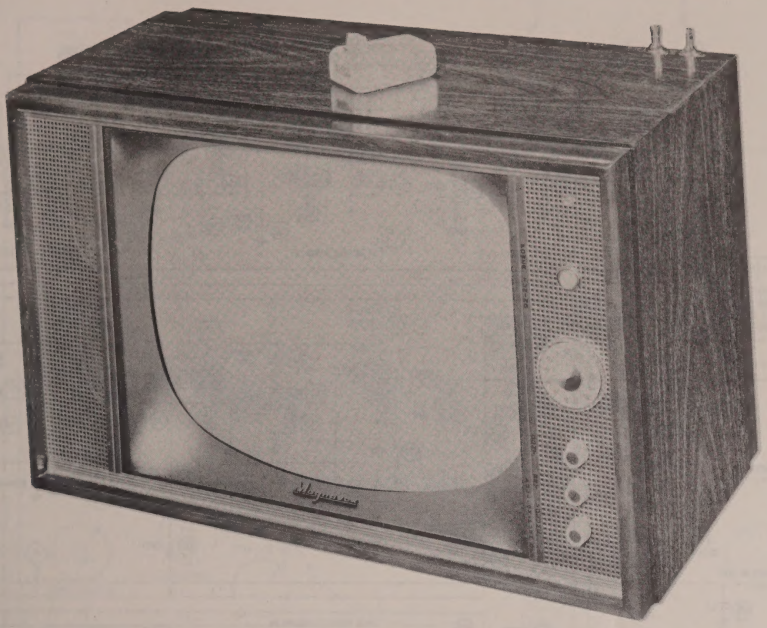
REPRESENTATIVE MODEL USING TV CHASSIS V32-02-11
WITH REMOTE CONTROL

MAGNAVOX CHASSIS
V32-01-11, V32-02-11

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

SET 497 FOLDER 1



REPRESENTATIVE MODEL USING TV CHASSIS V32-02-11 WITH REMOTE CONTROL

TRADE NAME	MAGNAVOX	TV Chassis	Remote Control Receiver	Remote Control Transmitter	Power Tuning
		V32-01-11 V32-02-11	700835-1	700838-1	700837-1
MANUFACTURER	Magnavox Co., 2131 Bueter Road, Ft. Wayne 4, Indiana				
TYPE SET	Television Receiver (V32-02-11 Chassis with Remote Control)				
TUBES	TV: VHF - Eighteen, UHF - Nineteen		Remote Control Receiver: Three		
POWER SUPPLY	110-120 Volts AC, 60 Cycle		RATING 240 Watts, 2.3 Amp. @ 117 Volts AC (When Tuning) 230 Watts, 2.0 Amp. @ 117 Volts AC (Not Tuning)		
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)				

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

Remove 4 screws holding the trim strip at the top edge of the safety glass. Tilt glass out and remove.

FUSE

A fuse is used for horizontal sweep circuit protection. (For location, see "Tube Placement Chart".)
A fuse wire is used for filament protection. (For location, see M3 in photo "Chassis Bottom View".)

TUNER OSCILLATOR ADJUSTMENTS

To touch up the VHF Oscillator, remove Channel Indicator and Fine Tuning knobs.

AGC

The AGC may be varied by means of a Local-Suburban-Distant Switch. (For location, see "Tube Placement Chart".)

FOCUS

The focus may be varied by means of a Focus control. (For location, see "Tube Placement Chart".)

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

Coarse adjustment of the Horizontal Hold is accomplished by the proper setting of the Horizontal Frequency Slug. (For location, see "Tube Placement Chart".)

WIDTH

The width may be varied by a Width Coil. (For location, see "Tube Placement Chart".)

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

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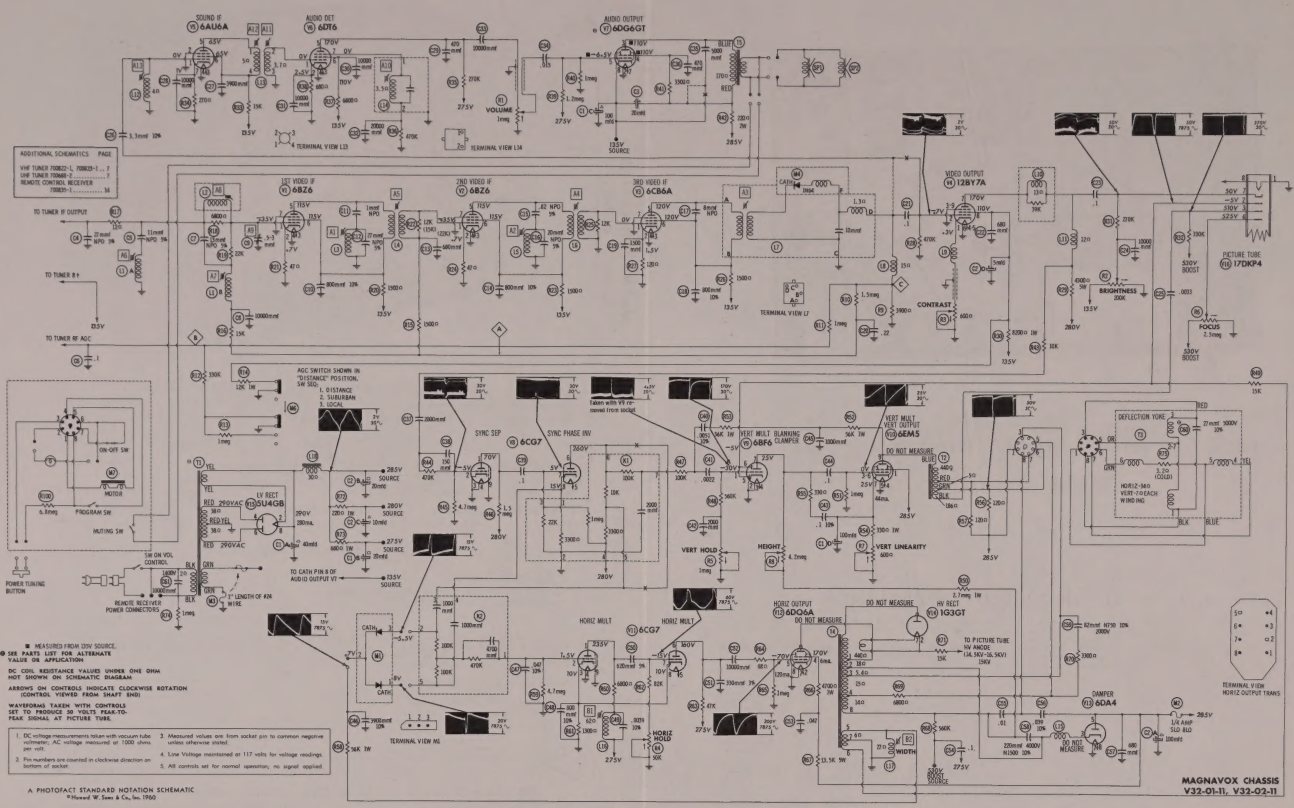
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America


MAGNAVOX CHASSIS V32-01-11, V32-02-11
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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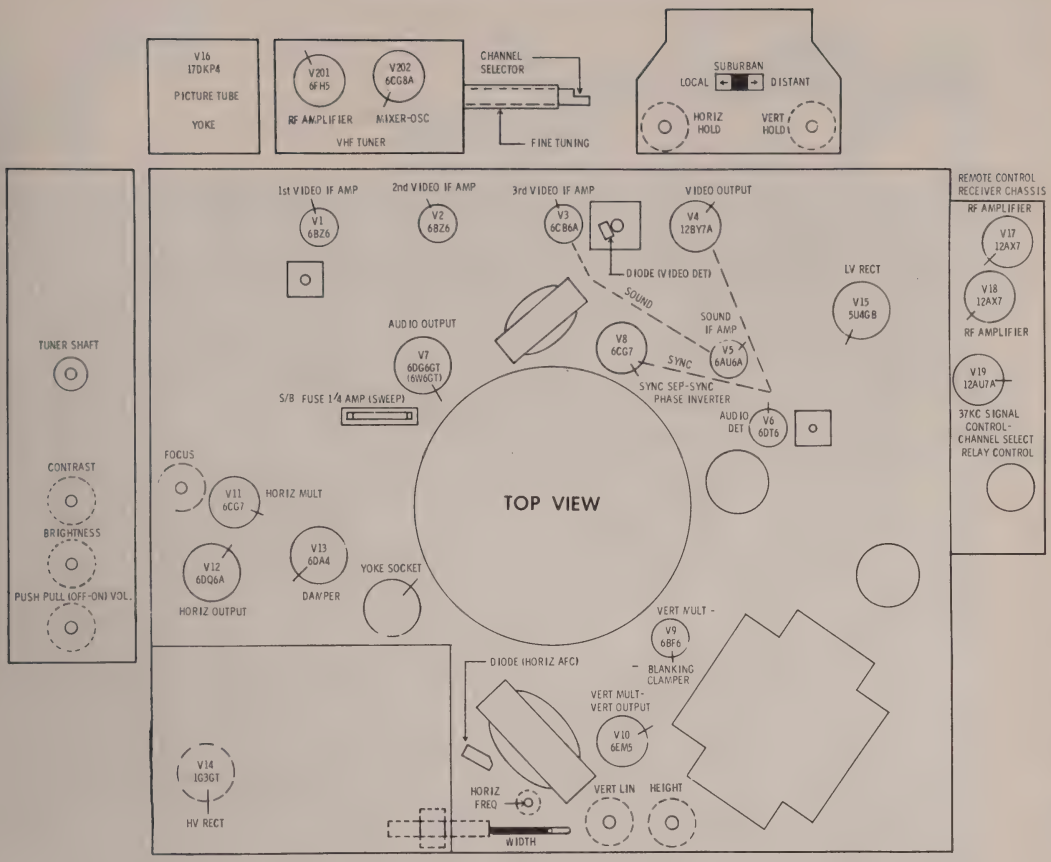
ADDITIONAL SCHEMATICS PAGE
SEE PARTS LIST FOR ALTERNATE VALUE ON APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 30 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltage measured at 1000 ohms per volt.
2. Pin numbers are counted in clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line Voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation, no signal applied.
SOUND IF V5 6AU6A
AUDIO DET V6 6DT6
AUDIO OUTPUT V7 6DG6GT
1ST VIDEO IF V1 6BZ6
2ND VIDEO IF V2 6BZ6
3RD VIDEO IF V3 6CB6A
VIDEO OUTPUT V4 12BY7A
PICTURE TUBE V16 17DKP4
SYNC SEP V8 6CG7
VERT MULT BLANKING CLAMPER V9 6BF6
VERT MULT VERT OUTPUT V10 6EM5
HORIZ MULT V11 6CG7
HORIZ MULT V12 6CG7
HORIZ OUTPUT V13 6DQ6A
HV RECT V14 1G3GT
DAMPER V15 6DA4
LV RECT V17 5U4GB
TERMINAL VIEW L13
TERMINAL VIEW L14
TERMINAL VIEW L15
TERMINAL VIEW M6
TERMINAL VIEW HORIZ OUTPUT TRANS
TO TUNER IF OUTPUT
TO TUNER B+
TO TUNER RF AGC
POWER TUNING BUTTON
REMOTE RECEIVER POWER CONNECTORS
ON-OFF SW
PROGRAM SW
MUTING SW
SW ON VOL CONTROL
TO CATH PIN 8 OF AUDIO OUTPUT V7
AGC SWITCH SHOWN IN "DISTANCE" POSITION.
1. DISTANCE
2. SUBURBAN
3. LOCAL
VOLUME
CONTRAST
BRIGHTNESS
FOCUS
HEIGHT
VERT HOLD
VERT LINEARITY
HORIZ HOLD
WIDTH
DEFLECTION YOKE
DO NOT MEASURE
TO PICTURE TUBE HV ANODE (14, 5KV-16, 5KV) 1.5KV
MAGNAVOX CHASSIS V32-01-11, V32-02-11

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound V15, Fuse Wire (Filament)

SWEEP FAILURE
No raster, has sound Fuse (Sweep), V11, V12, V13, V14, V16
No vertical deflection V9, V10
Poor vert. linearity or foldover V9, V10
Poor horiz. linearity or foldover V11, V12, V13
Narrow picture V11, V12, V13, V15
Vert. off freq. V9
Horiz. off freq. Diode (Horiz. AFC), V11

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, Diode (Video Det.)
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V16
Has pic, no sound V5, V6, V7

SYNC FAILURE
No vert. sync V8
No horiz. sync V8, Diode (AFC)
No vert. or horiz. sync V8

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: A1, A2, and A4 thru A11 .... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
A3 ..... GENERAL CEMENT #8721, 8722
WALSCO #2519
Mixer Plate Coil ..... GENERAL CEMENT #9296, 9297
WALSCO #2546, 2547

VIDEO IF ALIGNMENT

Connect the negative lead of a 3 volt bias supply to point (A). Positive to chassis.
Connect the negative lead of a 2.5 volt bias supply to point (B). Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough generator output to provide a usable indication.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	High side thru .01mfd to pin 1 (grid) of 1st Video IF. Low side to chassis.	44.0MC (10MC swp.)	39.75MC	Any non-interfering channel	Vert. Amp. thru 10K to point (C). Low side to chassis. (Across Video Det. load.)	A1	Adjust to place marker in trap notch. (See Fig. 1.)
2.	"	"	47.25MC	"	"	A2	"
3.	"	"	42.25MC 45.0MC 45.75MC	"	"	A3, A4, A5	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. A3 controls gain at center of curve, A4 controls 45.75MC marker and A5 controls 42.25MC marker.
4.	Place a thin insulated metal strip between the Mixer-Osc. tube and tube shield. Connect the high side of sweep generator to the metal strip. Low side to chassis.	"	"	"	"	Mixer Plate Coil	Adjust for maximum gain and symmetry of response similar to Fig. 2 with markers as shown.
5.	"	"	41.25MC	Any non-interfering channel	"	A6	Adjust to place marker in trap notch. (See Fig. 2.)
6.	"	"	47.25MC	"	"	A7, A8	"
7.	"	"	45.75MC	"	"	A9	Adjust A8 and retouch Mixer Plate Coil for maximum gain and proper tilt maintaining position of 45.75MC marker as shown in Fig. 2.

SOUND IF ALIGNMENT

Preset A10 for MINIMUM inductance.
Tune in a strong TV signal (preferably a tone signal or music). Adjust A10 just past the point of maximum sound with MINIMUM distortion. Reduce the signal level by disconnecting the antenna leads or placing an adjustable attenuator pad across the terminals so that with the volume set near maximum, sound is at a low level. Tune the Fine Tuning through undistorted sound. Set the Fine Tuning at the verge of distortion. Adjust A11, A12 and A13 for MINIMUM distortion.
Readjust the Fine Tuning as necessary during adjustment of A11, A12 and A13 to maintain the conditions described above.

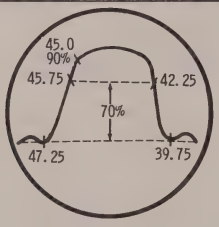


FIG.1

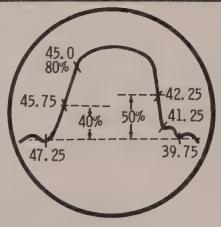


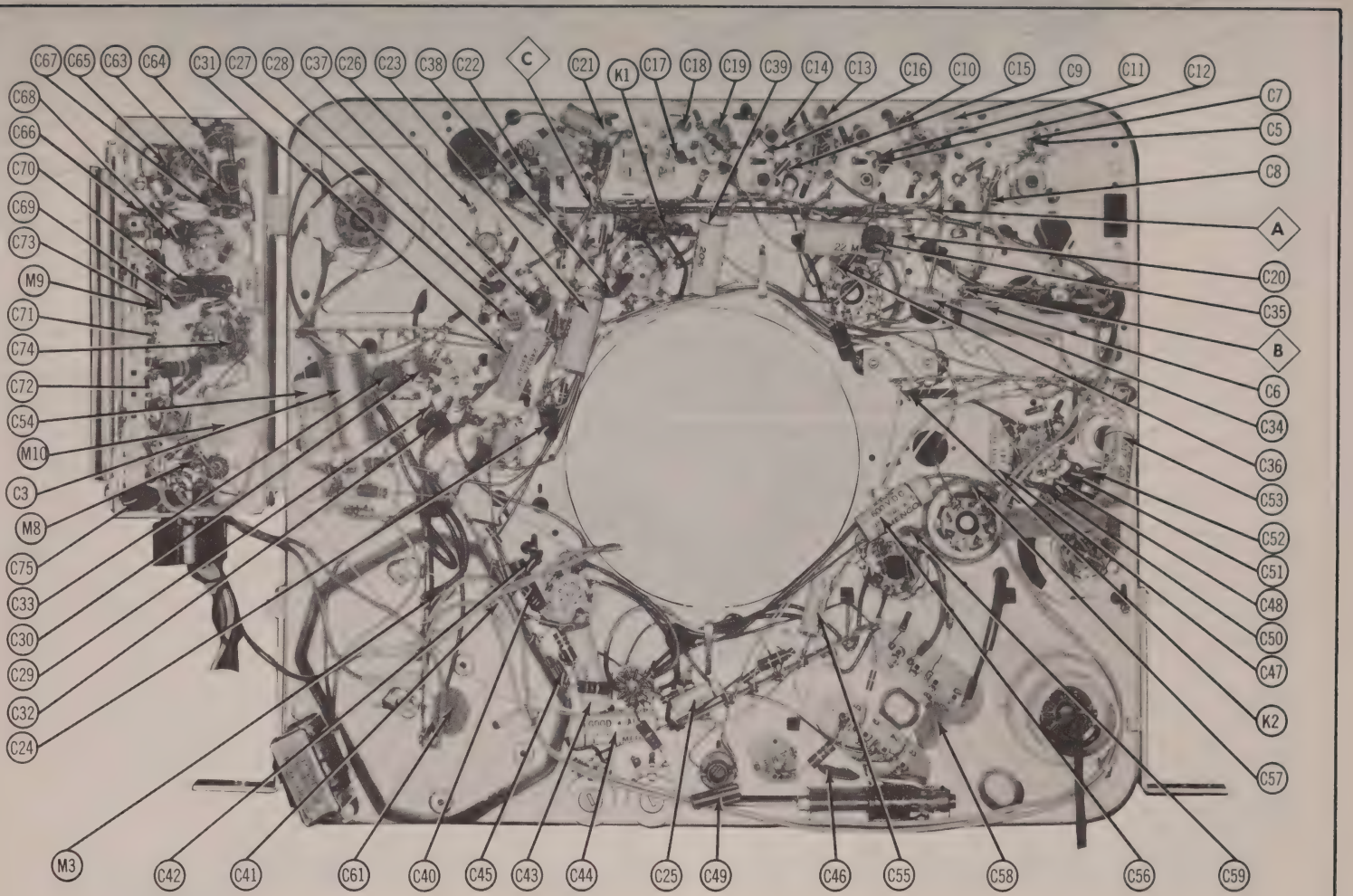
FIG.2

TRANSMITTER ALIGNMENT

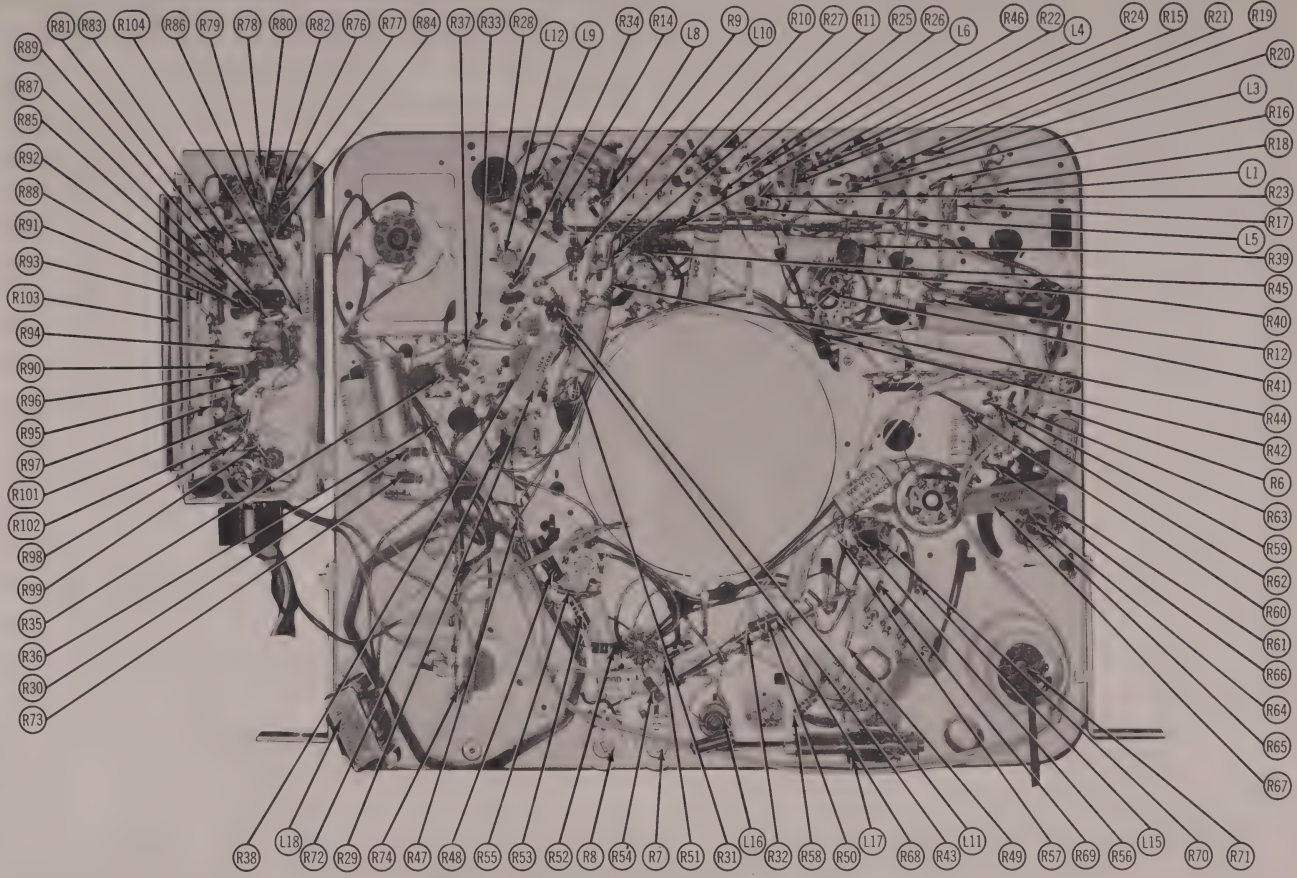
The frequency of the transmitter whistle is tuned to 37KC at the factory. If it becomes necessary to make an adjustment, a small screw is provided in the top of the whistle. Connect DC probe of VTVM to pin 7 (grid) of V19 (Relay Control Tube of Remote Control Receiver). Common to chassis. Adjust whistle adjustment screw for maximum deflection.

RECEIVER ALIGNMENT

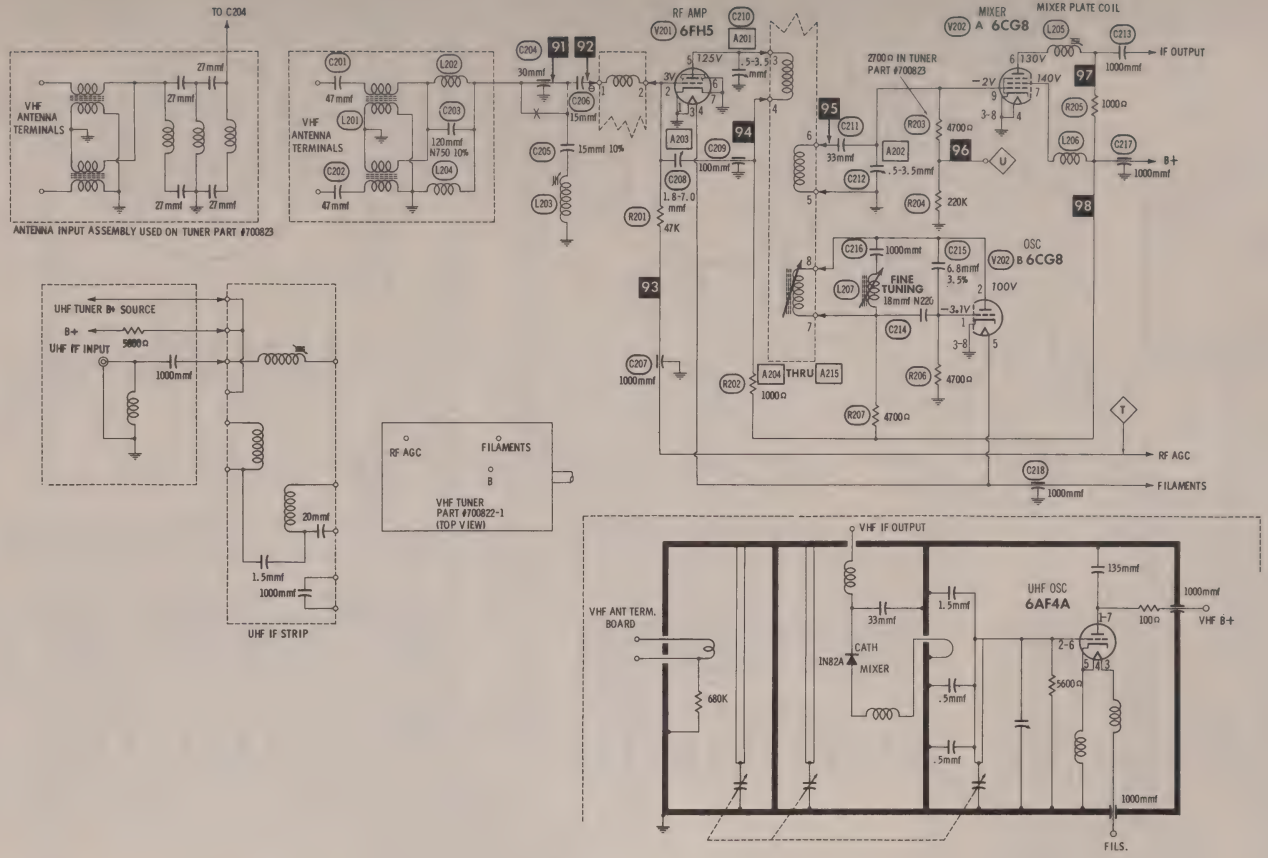
Connect DC probe of VTVM to pin 7 (grid) of Relay Control Tube. Inject 37KC signal at microphone jack. Adjust A14 for maximum deflection.



CHASSIS BOTTOM VIEW - CAPACITOR & MISC. IDENT.



CHASSIS BOTTOM VIEW - RESISTOR & INDUCTOR IDENT.



A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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VHF TUNER 700822-1, 700823-1

UHF TUNER 700688-2

MAGNAVOX CHASSIS V32-01-11, V32-02-11

TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: A201 thru A203 ..... GENERAL CEMENT #5000, 5003, 5014, 5015, 5016, 8276, 8290
WALSCO #2512, 2515, 2522, 2523, 2525, 2537
A204 thru A215 ..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8987
WALSCO #2531

RF AND MIXER ALIGNMENT

Connect the negative lead of a 4 volt bias supply to point Ⓣ . Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Turn Contrast fully clockwise.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	195MC	193.25MC 197.75MC	10	Vert. Amp. to point Ⓤ . Low side to chassis.	A201, A202, A203	Adjust A201 and A202 for maximum amplitude and symmetry with markers as shown in Fig. 201. Increase bias for MINIMUM amplitude of response curve. Without changing the bias adjust A203 to obtain MINIMUM response on the scope.
2.	"	"	213MC	211.25MC 215.75MC	13	"		Check for response curve similar to Fig. 201. If markers fall below 70% on any channel, make compromise adjustment of A201 and A202 with channel switch set to that channel. Check to see that other channels have not been seriously affected.
			207MC	205.25MC 209.75MC	12			
			201MC	199.25MC 203.75MC	11			
			195MC	193.25MC 197.75MC	10			
			189MC	187.25MC 191.75MC	9			
			183MC	181.25MC 185.75MC	8			
			177MC	175.25MC 179.75MC	7			
			85MC	83.25MC 87.75MC	6			
			79MC	77.25MC 81.75MC	5			
			69MC	67.25MC 71.75MC	4			
			63MC	61.25MC 65.75MC	3			
			57MC	55.25MC 59.75MC	2			

FIG 201

OSCILLATOR ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the Fine Tuning to the center of its range.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 10K across Video Det. load.	A204	Adjust to place sound marker in trap notch as in Fig. 202. Video marker should fall at 50%.
			207MC	205.25MC 209.75MC	12		A205	
			201MC	199.25MC 203.75MC	11		A206	
			195MC	193.25MC 197.75MC	10		A207	
			189MC	187.25MC 191.75MC	9		A208	
			183MC	181.25MC 185.75MC	8		A209	
			177MC	175.25MC 179.75MC	7		A210	
			85MC	83.25MC 87.75MC	6		A211	
			79MC	77.25MC 81.75MC	5		A212	
			69MC	67.25MC 71.75MC	4		A213	
			63MC	61.25MC 65.75MC	3		A214	
			57MC	55.25MC 59.75MC	2		A215	

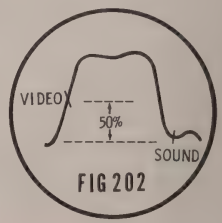


FIG 202

TV PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	1st Video IF Amp.	6BZ6	V9	Vert. Mult. - Blanking Clamper	6BF6
V2	2nd Video IF Amp.	6BZ6	V10	Vert. Mult. - Vert. Output	6EM5
V3	3rd Video IF Amp.	6CB6A	V11	Horiz. Mult.	6CG7
V4	Video Output	12BY7A	V12	Horiz. Output	6DQ6A
V5	Sound IF Amp.	6AU6A	V13	Damper	6DA4
V6	Audio Detector	6DT6	V14	HV Rectifier	1G3GT
V7	Audio Output	6DG6GT (6W6GT)*	V15	LV Rectifier	5U4GB
V8	Sync Sep. - Sync Phase Inverter	6CG7			

* Alternate

PICTURE TUBE

ITEM No.	REPLACEMENT DATA					NOTES
	MAGNAVOX PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
V16	17DKP4		17DKP4 ①	17DKP4 ①	17DKP4 ②	① Aluminized ② Silver Screen "85"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	MAGNAVOX PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	▲40	350	270021-73	AFH4-120-10	D0995	FP453	TMQ-168	TVLS-4608.8*	
B	■20	350				TC55	TD-20-350		
C	▲100	200							
D	100	50							
C2A	▲100	350	270021-72	AFH4-07	D0044	FP454.4	TMQ-194	TVLS-4635.9*	
B	■20	350							
C	▲10	350							
D	5	350							
C3	20	350	270027-20	PRS1735	BR2035	WP230.9	TD-20-350	TVA-1608	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	27 NPO 5%			TCZ-27	C10Q27C		CNO-427	10TCC-Q27
C5	11 NPO 5%			TCZ-12	C10Q12C		CNO-412	10TCC-Q12
C6	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C7	13 NPO 5%			TCZ-12	C10Q13C		CNO-412	10TCC-Q12
C8	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C9	.5-3			829-3		CV-1	CT565	
C10	800 10%		DI-820	DD-801	1R5T8	CCD-801	GP382	10TS-T80
C11	1 NPO		NPO-SI 1.0	TCZ-1			CNO-510	10TCC-V10
C12	27 NPO 5%			TCZ-27	C10Q27C		CNO-427	10TCC-Q27
C13	680		BPD-00068	DD-681	BYA10T68	CCD-681	B-368	10TS-T68
C14	800 10%		DI-820	DD-801	1R5T8	CCD-801	GP382	10TS-T80
C15	.82 NPO 5%	#250088-182						
C16	20 NPO 5%			DTZ-20	C10Q2C		CNO-422	10TCC-Q20
C17	8 NPO		NPO-DI 8.2		C10V8C			10TCC-V82
C18	800 10%		DI-820	DD-801	1R5T8	CCD-801	GP382	10TS-T80
C19	1500		BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C20	.22 200V		P288N-22		CUB2P22	2DP-4-224	GEM-2022	2TM-P22
C21	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C22	680		BPD-00068	DD-681	BYA10T68	CCD-681	B-368	10TS-T68
C23	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C24	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C25	.0033 600V		P688N-0033	D6-332	CUB6D33	6DP-1-332	GEM-6233	6TM-D33
C26	3.3 10%		NPO-SI 3.3	TCZ-3R3	C10V33C	CCTO-3R3	CNO-533	10TCC-V33
C27	3900		BPD-004	DD-392	L10D39	CCD-392	GP239	10TS-D39
C28	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C29	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C30	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C31	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C32	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C33	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C34	.015 200V		P288N-015	DD-153	PM4SI5	4DP-1-153	GEM-4115	4TM-SI5
C35	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C36	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C37	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C38	150		BPD-00015	DD-151	L10T15	CCD-151	B-315	10TS-T15
C39	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C40	.0051 400V 10%				PM6D5	6DP-1-502		6TM-D50
C41	.0022 600V		P688N-0022	D6-222	CUB6D22	6DP-1-222	GEM-6222	6TM-D22
C42	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C43	.1 400V 10%		V84C4P1-10%		PM4P1	4DP-3-104	GEM-1001	4TM-P1
C44	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C45	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C46	3900 10%		DI-4000		PM6D4	CCD-392	JL-239	10TS-D39
C47	.047 200V 10%		V84C2S47-10%		PM2S47	4DP-3-473		4TM-S47
C48	800 10%		DI-820	DD-801	1R5T8	CCD-801	GP382	10TS-T80
C49	.0039 200V 10%		V84C6D4-10%		PM6D4	6DP-1-392	JL-239	10TS-D39
C50	620 5%		1469-00062		1R5T62	CM-19B-621J		MS-362
C51	330 3%					VCM-20-331G		
C52	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C53	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C54	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C55	.01 600V		P688N-01	D6-103	CUB6S1	6DP-2-103	GEM-611	6TM-S1
C56	.039 600V 10%		V84C6S4-10%		PM6S4	6DP-3-393		6TM-S4
C57	680		BPD-00068	DD-681	BYA10T68	CCD-681	B-382	10TS-T68

TV PARTS LIST AND DESCRIPTIONS (Continued)

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C56	230 -4000V N1500 10%	#26GJT5-T4						
C58	82 3000V N750 10%	MUST be 50 Sizes 1						
C60	3T 3000V 10%						6DY-437	
C61	5000M 10000		DAC-37	DDS-103	HVH15K	16DP-3-103	VAC-120	BL-B20

Magnavox Part Number. Note 1. May not be used in some versions.

CONTROLS

ITEM No.	RATING: ANCE	WATTS	REPLACEMENT DATA: MAGNAVOX PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	Sizeg	1	230135-1		C4TA-1meg-2	B11-137	PP15L	Volume
B	Switch				Not Req.	S1C	Not Req.	Push-Pull, Off-On
R2A	200K	1	230146-10	BX-45	8547-200K	B11-139	U43	Brightness
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	
R3A	500K	1	230136-73	A47-750-S	A47-750-S	U3	U3	Contrast
B	Shaft			Not Req.	F3-S	Not Req.	Not Req.	
R4A	10K	1	[illegible]	BX-31	8547-50K-S	B11-133	PTA24L	Horiz. Hold
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	
R5A	1Meg	1	[illegible]	BX-49	8547-1meg-S	B11-137	PTA124L	Vert. Hold
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	
R6A	2 Meg	1	[illegible]	BX-53	8547-2 Meg-S	B11-329	SU-585	Focus
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	
R7A	500K	1	230148-13	AB-4	A47-750-S	B11-105	PTA33L	Vert. Linearity
B	Shaft			AK-1	Not Req.	TM4	Not Req.	
R8A	4 Meg	1	230146-18	AB-58	8547-5meg-S	B11-141	PTA54L	Vert. Height
B	Shaft			AK-1	Not Req.	TM4	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R9	3900Ω	
R10	1.5meg	
R11	1meg	
R12	330K	
R13	1meg	
R14	12K 1W	
R15	1500Ω	
R16	15K	
R17	1MΩ	
R18	68000	
R19	22K	
R20	1500Ω	
R21	47Ω	
R23	12K	(15K), (22K) †
R25	1500Ω	
R34	47Ω	
R35	12K	
R36	1500Ω	
R37	120Ω	
R38	470K	
R39	4300Ω 5W	#240076-22
R30	82000 1W	
R31	270K	
R32	330K	
R33	15K	
R34	2700	
R35	270K	
R38	470K	
R37	68000	
R38	680Ω	
R39	1.2meg	
R40	1meg	
R41	3300Ω	
R42	2200 2W	
R43	10K	
R44	470K	
R45	4.7meg	
R46	1.5meg	
R47	100K	
R48	560K	
R49	15K	
R50	2.7meg 1W	
R51	1meg	
R52	56K 1W	
R53	56K 1W	
R54	330Ω 1W	
R55	330Ω	
R56	120Ω	
R57	120Ω	
R58	56K 1W	
R59	4.7meg	
R60	6800Ω	
R61	1300Ω	
R62	82K	
R63	47K	
R64	68Ω	
R65	1meg	
R66	47000 1W	
R67	13.5K 5W	#240071-38
R68	560K	
R69	68000	
R70	3300Ω	
R71	15K	
R72	2200 1W	
R73	6800 1W	
R74	1meg	
R75	3.3Ω (Cold)	#230131-1

† Alternate Values # Magnavox Part Number

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: MAGNAVOX PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L4A	41.25MC Trap	380803-1	20-1044	20-1044	TV-131	9226	VT-4	
B	47.25MC Trap		17-4534	17-4534	TV-131	9226		
L3	1st Video IF	380798-1	20-1044	20-1044	TV-131	9226	VT-4	
L2	2nd Video IF	380801-1	17-4533	17-4533	TV-132	9225		
L4	2nd Video IF	380799-1	17-4533	17-4533	TV-130	9229	VT-3	
L7	47.25MC Trap	380801-1	17-4534	17-4534	TV-131	9226		
L6	3rd Video IF	380799-2	17-4533	17-4533	TV-130	9229	VT-3	
L7A	4th Video IF	380800-1						
B	RF Choke		19-1002	19-1002	RC-563	4606		3uh
C	RF Choke		19-1009	19-1009		4611		8uh
L8	Shunt Peaking Coil	380823-12	19-3500	19-3500	TV-303	6174	VP-8	500uh
L9	Cathode Choke	380820-1	19-1001	19-1001	RC-562	4604	VP-9	1.8uh
L10	Series Peaking Coil	380823-13 ①	19-3280 †	19-3280 †	TV-185 †	6181 †	VP-6 †	238uh
L11	Shunt Peaking Coil	380823-12	19-3500	19-3500	TV-303	6174	VP-8	270uh
L13	1st Sound IF	380772-1	17-3402	17-3402	TV-118	1670	SF-3	
L12	2nd Sound IF	380772-2			TV-142			
L14	Quadrature Coil	380768-2	17-1031 ▲	17-3031 ▲	TV-134 ▲	1681 ▲	SD-5	
L15	RF Choke	380782-1	19-1003	19-1003	RW-530	4528		3uh

① Wound on 39K Resistor. † Parallel with 39K Resistor. ▲ Drill mounting holes.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES. PRI.	SEC	REPLACEMENT DATA: MAGNAVOX PART No.	Halldorson PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Thordarson PART No.	NOTES
L16	62Ω		380879-2	HS-5	TV-183	9220	H-102	RS-5	Horiz. Stab.

COILS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: MAGNAVOX PART No.	Halldorson PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L17	Width Coil T-RIMM	380699-1		MWC-12 ①	9315 ①	30UR34 ①	QRC104 ①	WC-18 ①	WC-18 ①	WLC-8 ①

① Drill new mounting hole.

FILTER CHOKE

ITEM No.	RATINGS: CURRENT (Measured)	DC RES	INDUCTANCE @ CURRENT 1000 (%)	REPLACEMENT DATA: MAGNAVOX PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L18	.380A	30Ω	.6 Hy.	380390-1				C-3343 ①		C-96X

① Use original mounting frame.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	SEC. 1	SEC. 2	REPLACEMENT DATA: MAGNAVOX PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V	340VCT	5V	300179-2 ①				P-8350		
	① 1.5A	② .380A	③ 2A							
	SEC. 3	SEC. 4	SEC. 5							
	6.3V ② 9A									

① Alternate Part Number 300179-1.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: MAGNAVOX PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T2	Vert. Output	230079-1				Y-110	DY-37A	Y-52	Y-60 ①
T3	Yoke Suite (19MM) 110° Vert. (15MM)	700747-2 †				①②	①③	①③	
	Rear Cover and Centering Device	380-804-1							YC-110
T4	Horiz. Output	380779-1		HVO-172					D-183 ④

† Includes R75.
① Remove Horiz. and Vert. Damping Network from Yoke; Use original Rear Cover and Centering Device.
② Connect Yoke Terminal #2 to Yoke Plug #8; Yoke Terminal #1 and #3 to Yoke Plug #6; Yoke Terminal #10 to Yoke Plug #9.
③ Connect Yoke Terminal #1 to Yoke Plug #2; Yoke Terminal #4 and #3 to Yoke Plug #5; Yoke Terminal #7 to Yoke Plug #8.
④ To correct excessive sweep, replace C57 with approximate 100mmf @ 4KV.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	SEC	REPLACEMENT DATA: MAGNAVOX PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T5	3100Ω	3-4Ω	230379-1	26850	A-3019	AU-600	A-3849	26850	S-57X	

SPEAKER

ITEM No.	TYPE: SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: MAGNAVOX PART No.	QUAM PART No.	NOTES
SP1	5" x 7"	PM	3-4Ω	380056-1	35A05	
SP2	3" x 5"	PM	3-4Ω	380056-3	35A05	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	MAGNAVOX PART No.	REPLACEMENT DATA
K2	Sync Phase Inverter Grid, Plate & Cathode Horiz. AFC	3000mmf, 3300Ω, 3300Ω, 10K, 22K, 100K, 1meg 1000mmf, 1000mmf, 4700mmf, 100K, 100K, 470K	380301-1	250298-1
K3				

RECTIFIERS

ITEM No.	RATING: CURRENT (Measured)	REPLACEMENT DATA: MAGNAVOX PART No.	INTERNATIONAL PART No.	ITT PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1		510048-3 ①	IT3 ②	8H6 ②			① Dual Diode (AFC) ② Silicon (3 Required)

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA: MAGNAVOX PART No. FUSE	HOLDER	LITTELFUSE PART No. FUSE	HOLDER	BUSS PART No. FUSE	HOLDER
M3	3AG	1/4A 250V 6/9	180157-30		313.250 (3AG 1/4A 250V 6/9)	357001	MDL-1/4	4405
M3	1¼" length #24 wire							

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA: MAGNAVOX PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
M4	1N54		1N54	1N60	1N54	Video Detector

MISCELLANEOUS

ITEM No.	PART NAME	MAGNAVOX PART No.	NOTES
M5	Tuner	700532-1	VHF
	Tuner	700523-1	VHF with UHF Provisions
	Tuner	700686-3	UHF
	Antenna	700826-1	JFD REPLACEMENT Type #TA-403
M6	Switch	180272-1	AGC Slide Type (Double Pole, 2 Position)
M7	Motor Assembly	800197-1	Includes Program Wheel and Switches (Program Switch #703031-1 (Mating Switch #703035-1)
	Switch	180319-1	On-Off Remote Control

WIRING DATA

High Voltage Lead	Use BELDEN No. 8069
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8534 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8494 (Round) - 4 Conductor 8465 (Round) - 5 Conductor 8485 (Round) - 8 Conductor

REMOTE CONTROL RECEIVER

TUBES

ITEM No.	CBS: USE	TYPE	RAYTHEON: USE	TYPE	SYLVANIA: USE	TYPE
V17	RF Amplifier	12AX7	V19	37EC Signal Control - Channel Select Relay Control	12AUTA	
V18	RF Amplifier	12AX7				

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP.	VOLT	REPLACEMENT DATA: MAGNAVOX PART No.	AEROVOX PART No.	CORNELL DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C85A	ea	200	27-0023-34	AFH3-48	B-300	FP321	TMD-33	TVL-3510	
B	a5	300							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C83	.1 300V		P2B5N-1	DF-104	CUB2P1	3DP-3-104	GEM-301	27M-P1
C84	33Ω		BPD-00033	DD-331	1G0Z33	CCD-33G	B-333	10TS-T33
C85	13Ω		DI-13Ω	DD-13	1J0T13	CCD-13E	GP312	10TS-T13
C86	.047 200V		P3B5N-047	DD-503	CUB2E47	4DP-3-473	GEM-4147	27M-S47
C87	33Ω		DI-33Ω	DD-33	1J0T33	CCD-33E	GP312	10TS-T33
C88	13Ω		DI-13Ω	DD-13	1J0T13	CCD-13E	GP312	10TS-T13
C89	12Ω		DI-12Ω	DD-12	1J0T12	CCD-12E	GP312	10TS-T12
C91	.1 200V		P3B5N-1	DF-104	CUB2P1	3DP-3-104	GEM-401	27M-P1
C71	2700 10%		DI-2700		1H5D27	CM-309-272K	MC1480 5	MB-127
C72	.1 300V		P3B5N-1	DF-104	CUB2P1	3DP-3-104	GEM-301	27M-P1
C73	10000		BPD-01	DD-103	BYA103E	CCD-103	B-110	5HK-H10
C74	3300		BPD-0033	DD-332	BYA0332E	CCD-332	B-133	5HK-D33
C75	10000		BPD-01	DD-103	BYA103E	CCD-103	B-110	5HK-H10

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R76	1meg	
R77	1meg	
R78	68K	
R79	100K	
R80	470Ω	
R81	100K	
R82	100K	
R83	100K	
R84	100K	
R85	100K	
R86	100K	
R87	100K	
R88	330K	
R89	100K	
R90	22K	
R91	220K	
R92	10meg	
R93	2.5meg	
R94	1meg	
R95	180Ω 1W	
R96	15K 2W	
R97	1meg	
R98	10meg	
R99	470K	
R100	6.8meg	
R101	33000	
R102	10Ω	
R103	68Ω 18W	#240078-2
R104	180Ω 5W	#240080-53

Magnavox Part Number.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: MAGNAVOX PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L9	37EC Coil	380817-1						Tap @ 3Ω

REMOTE CONTROL RECEIVER (Continued)

RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA MAGNAVOX PART No.	INTERNATIONAL PART No.	ITT PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M8 M9	.010A	530051-4 ① 530061-1 ②	5E4 ①	HA504 ①	40K ①	SR500 ①	① Silicon Diode ② Selenium Diode

MISCELLANEOUS

ITEM No.	PART NAME	MAGNAVOX PART No.	NOTES
M10	Relay	160326-1	SPDT (Channel Selector)
M11	Microphone and Cable Assembly	700836-1	

TUNER PARTS LIST AND DESCRIPTIONS

700822–1, 700823–1

TUBES

• CBS • GENERAL ELECTRIC • RAYTHEON • SYLVANIA •

ITEM No.	USE	TYPE
V201	RF Amp.	6FH5
V202	Mixer-Osc.	6CG8

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	47		NPO-DI 47	DTZ-47	C10Q47C	CCTO-470	CNO-447	10TCC-Q47
C202	47		NPO-DI 47	DTZ-47	C10Q47C	CCTO-470	CNO-447	10TCC-Q47
C203	120 N750 10%			TCN-120	C10T12U	CCTN-121	CN7-312	10TCU-T12
C204	30	#250279-1						
C205	15 10%		NPO-DI 15	DTZ-15	C10Q15C	CCTO-150	CNO-415	10TCC-Q15
C206	15	Note 1	NPO-DI 15	DTZ-15	C10Q15C	CCTO-150	CNO-415	10TCC-Q15
C207	1000		EF-001	MFT-1000		CCF-102	CT280A	
C208	1.8-7	#250145-3		829-7				
C209	100		EF-0001	MFT-100				
C210	.5-3.5			829-3		CV-1	CT565	
C211	33		NPO-DI 33	DTZ-33	C10Q33C	CCTO-330	CNO-433	10TCC-Q33
C212	.5-3.5			829-3		CV-1	CT565	
C213	1000		DI-1000	DD-102	BYA10D1	CCD-102	GP210	10TS-D10
C214	18 N220	#250287-1				*		10TCR-Q18
C215	6.8 3.5%		NPO-DI 6.8	DTZ-6R8	C10V68C	CCTO-6R8	CNO-568	10TCC-V68
C216	1000		DI-1000	DD-102	BYA10D1	CCD-102	GP210	10TS-D10
C217	1000		EF-001	MFT-1000		CCF-102	CT280A	
C218	1000		EF-001	MFT-1000		CCF-102	CT280A	

Note 1. A 28mmf capacitor (Part #250280-1) used in Tuner 700823. # Magnavox Part No.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

RESISTORS

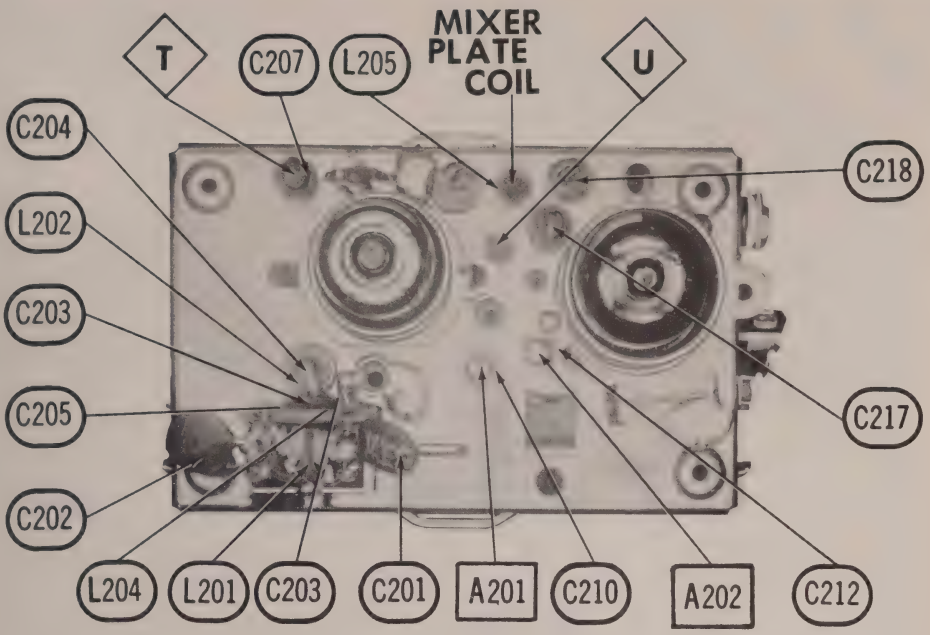
All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R201	47K	
R202	1000Ω	
R203	4700Ω	Note 1
R204	220K	
R205	1000Ω	
R206	4700Ω	
R207	4700Ω	

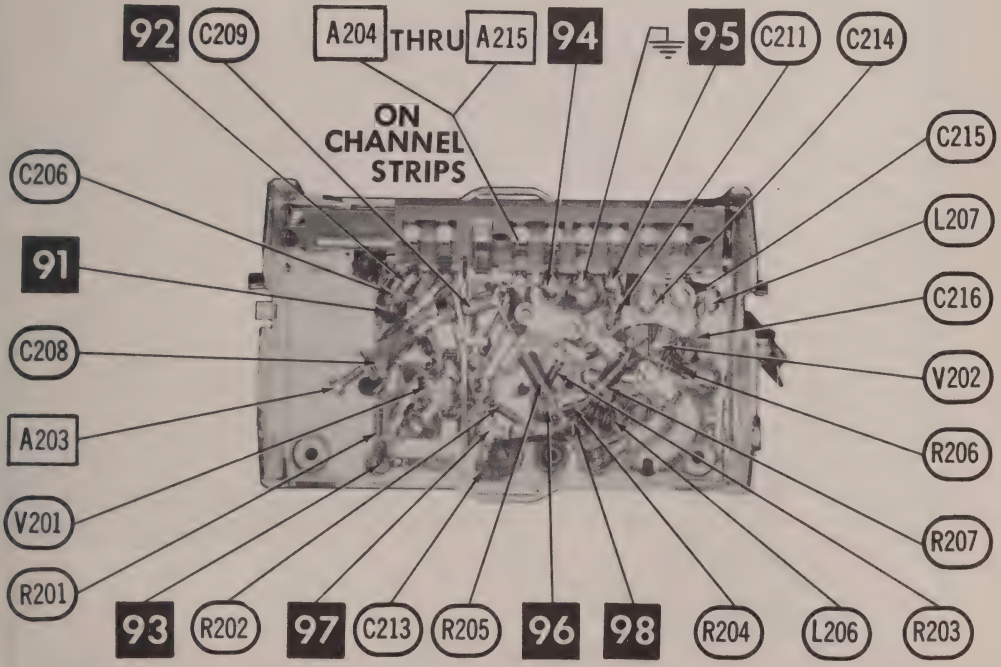
Note 1. A 2700Ω resistor used in Tuner 700823.

COILS (RF-IF)

ITEM No.	USE	MAGNAVOX PART No.	NOTES
L201	Ant. Trans.	360813-1	
L202	RF Choke	360740-3	
L203	Trap Coil	360740-4	
L204	RF Choke	360812-1	
L205	Mixer Plate Coil	360765-2	
L206	RF Choke	360810-1	
L207	Fine Tuning Coil	360811-1	



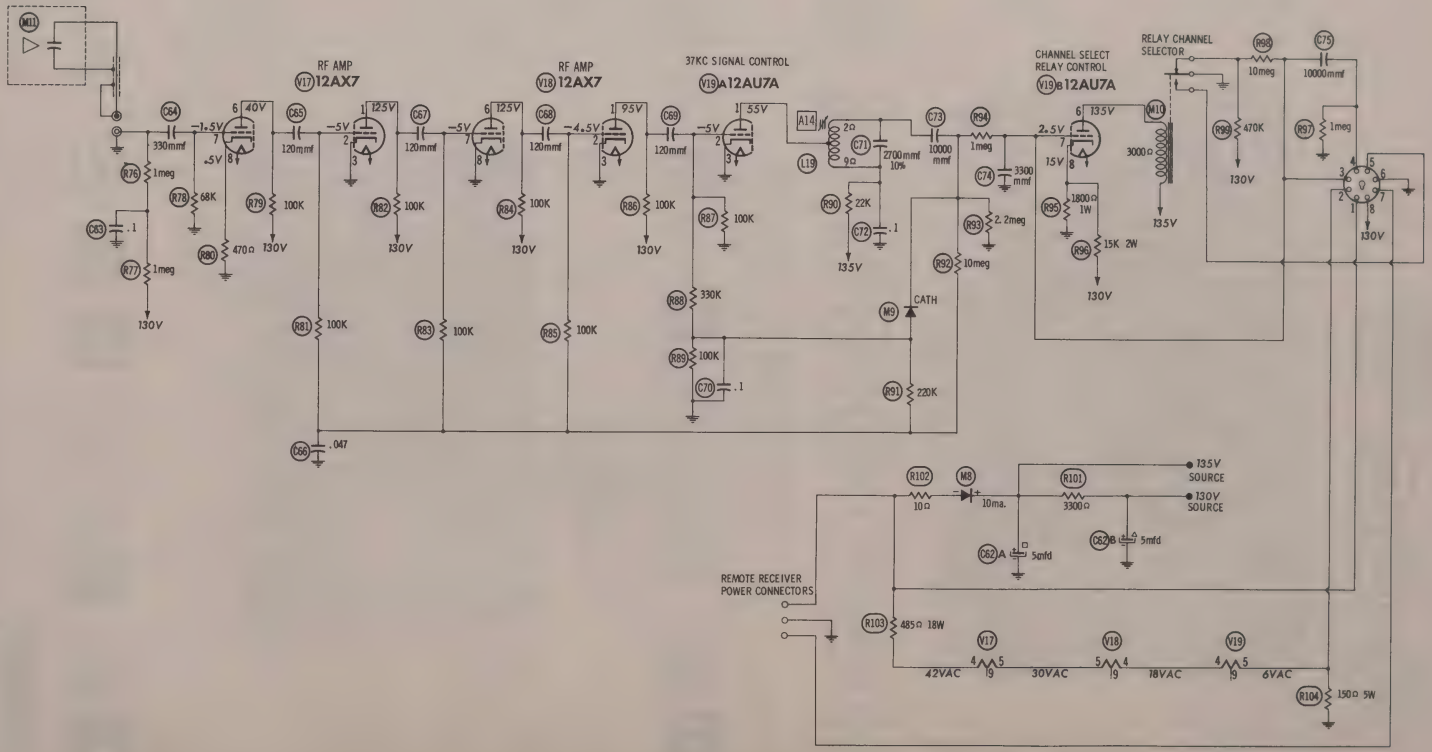
VHF TUNER 700822-1 - TOP VIEW



A Howard W. Sams CIRCUITRACE® Photo

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

VHF TUNER 700822-1 - BOTTOM VIEW



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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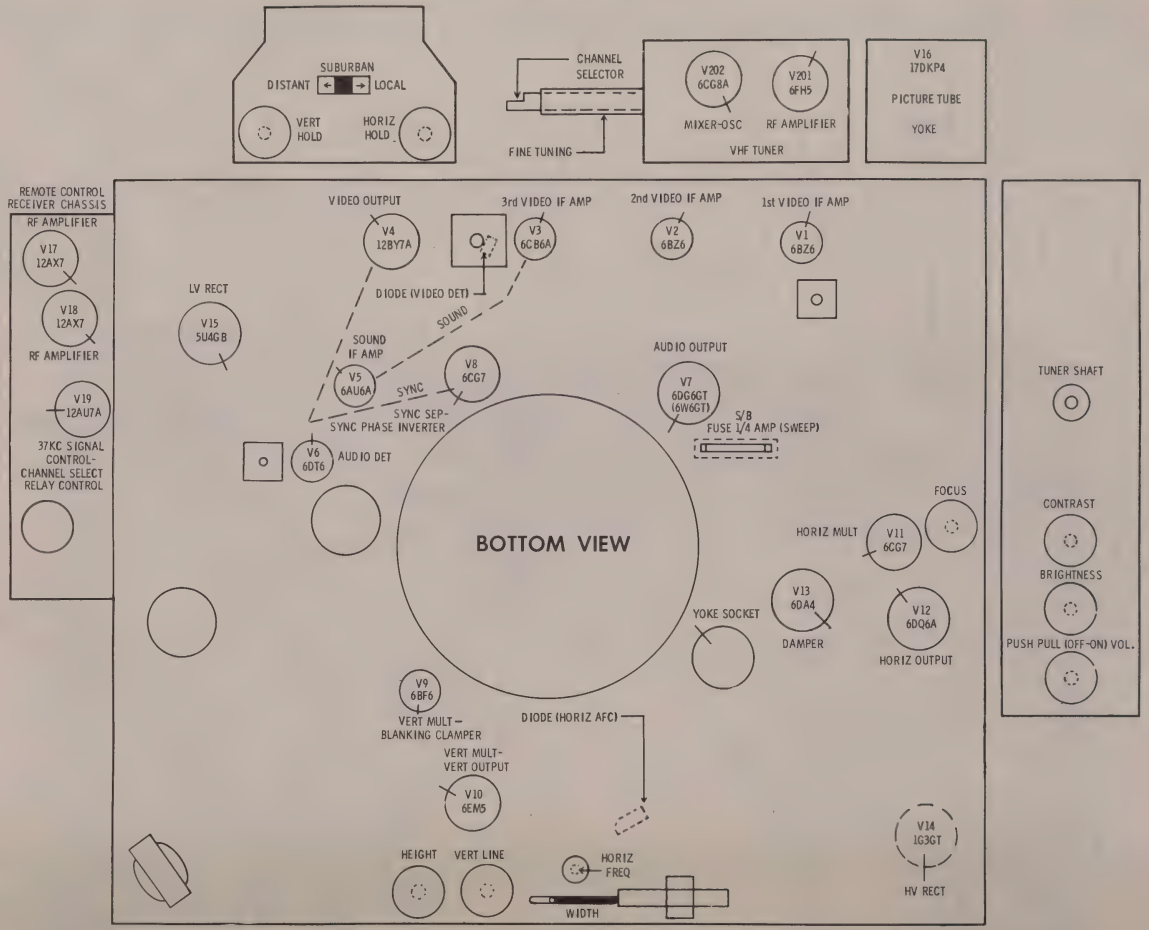
REMOTE CONTROL RECEIVER 700835-1

TUBE PLACEMENT CHART



CHASSIS - TOP VIEW

RESISTANCE MEASUREMENTS

TV

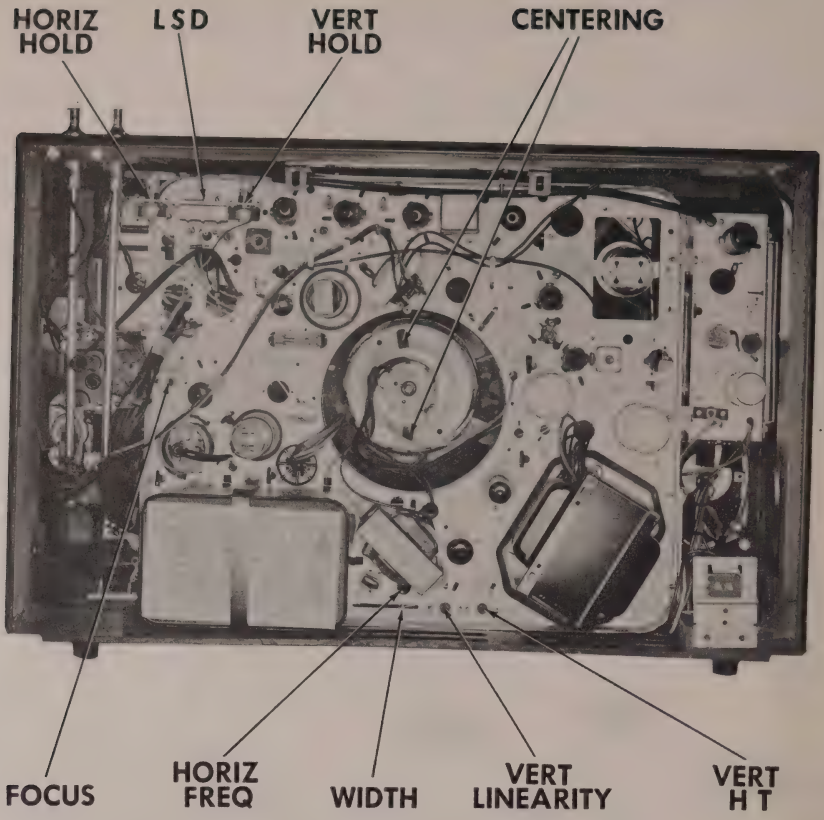
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	1.6meg	47Ω	.1Ω	0Ω	▪1500Ω	▪1500Ω	0Ω		
V2	6BZ6	1.6meg	47Ω	.1Ω	0Ω	▪1500Ω	▪1500Ω	0Ω		
V3	6CB6A	.2Ω	120Ω	.1Ω	0Ω	▪1500Ω	▪1500Ω	0Ω		
V4	12BY7A	● 90Ω	470K	0Ω	.1Ω	.1Ω	0Ω	†4500Ω	▪8200Ω	0Ω
V5	6AU6A	4Ω	0Ω	.1Ω	0Ω	▪15K	▪15K	270Ω		
V6	6DT6	3.7Ω	680Ω	.1Ω	0Ω	†270K	▪6800Ω	470K		
V7	6DG6GT	TP	0Ω	†420Ω	†3500Ω	500K	NC	.1Ω	¶	
V8	6CG7	†1.5meg	4.7meg	0Ω	0Ω	.1Ω	†13K	22K	3300Ω	0Ω
V9	6BF6	● 1meg	0Ω	0Ω	.1Ω	15K	15K	●†4.4meg		
V10	6EM5	†30Ω	NC	NC	.1Ω	0Ω	1meg	●500Ω	NC	†550Ω
V11	6CG7	†7500Ω	4.5meg	1300Ω	0Ω	.1Ω	†47K	●110K	1300Ω	0Ω
V12	6DQ6A	TP	.1Ω	TP	†18K	1meg	NC	0Ω	0Ω	TOP CAP †18Ω
V13	6DA4	NC	NC	¶3.5meg	NC	†30Ω	NC	0Ω	.1Ω	
V14	1G3GT		PINS	1 THRU 8	HAVE	INFINITE	RESISTANCE			TOP CAP †460Ω
V15	5U4GB	NC	¶	NC	38Ω	NC	38Ω	NC	¶	
V16	17DKP4	0Ω	15K	†890K	● 800K	NC	NC	●270K	.1Ω	
V201	6FH5	0Ω	▲1meg *600K ♦347K	0Ω	.1Ω	▪1000Ω	0Ω	0Ω		
V202	6CG8A	4700Ω	▪4700Ω	0Ω	0Ω	.1Ω	▪1000Ω	▪0Ω	0Ω	224K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
▪ MEASURED FROM 135V SOURCE
† MEASURED FROM PIN 8 OF V15.
‡ MEASURED FROM PIN 3 OF V13.
NC NO CONNECTION
▲ MEASURED IN "LOCAL" POSITION.
* MEASURED IN "SUBURBAN" POSITION.
♦ MEASURED IN "DISTANT" POSITION.
TP TIE POINT

REMOTE CONTROL RECEIVER

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V17	12AX7	†100K	400K	0Ω	160Ω	110Ω	†100K	68K	470Ω	135Ω
V18	12AX7	†100K	400K	0Ω	65Ω	110Ω	†100K	400K	0Ω	87Ω
V19	12AU7A	†22K	100K	0Ω	65Ω	15Ω	†3000Ω	3meg	1800Ω	40Ω

† MEASURED FROM OUTPUT OF M8.



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Set the Horizontal Hold Control to the center of its range. Adjust the Horizontal Frequency Slug (B1) until the picture synchronizes horizontally. Keep turning B1 in the same direction until the picture just falls out of sync. Reverse the direction of rotation until the picture just falls into sync. Rotate the Horizontal Hold Control to both extreme ends of rotation. The picture should either stay in sync at both ends of rotation or should fall out of sync by an equal number of bars at each end. If neither of these conditions occur, repeat procedure.

Adjust the Width Slug (B2) for a picture slightly wider than necessary to fill the picture mask horizontally.

PHOTOFACT® Folder

SONORA MODEL
S60P173

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

SONORA MODEL
S60P173

MODEL S60P173

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SONORA MODEL S60P173

MODEL S60P173

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 5 push-on type knobs from the front of cabinet.
2. Remove 6 metal screws holding rear cover. Remove antenna connections. Remove rear cover.
3. Remove 5 metal screws holding front glass. Remove the front glass.
4. Remove 3 metal screws holding front control bracket to picture tube mounting strip.
5. Remove speaker leads, picture tube socket, yoke plug, antenna lead and HV lead.
6. Remove 4 chassis bolts from bottom of cabinet and one one each side of chassis.
7. Remove chassis.

CAUTION

ONE SIDE OF AC LINE CONNECTED TO CHASSIS.

Care should be exercised when connecting test equipment or physically contacting chassis. Isolation devices employed by manufacturer should be checked and properly connected before returning receiver to owner.

TRADE NAME	Sonora Model S60P173
SUPPLIER	Park Radio Service, Inc., 130 Cedar Street, New York 6, N. Y.
TYPE SET	Portable Television Receiver
TUBES	VHF - Sixteen, UHF - Seventeen
POWER SUPPLY	110-120 Volts AC, 60 Cycle RATING 140 Watts, 1.45 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

Remove 5 push-on type knobs from the front. Remove 5 screws holding trim. Tilt glass out and remove.

FUSE DEVICE

A 5.5Ω fusible resistor is used for low voltage power supply protection. (For location, see R93 in photo "Upper Chassis- Top View".)

TUNER OSCILLATOR ADJUSTMENTS

To touch-up VHF Oscillator, remove plug in side of cabinet.

AGC

The AGC may be varied by means of an AGC control. (For location, see "Tube Placement Chart".)

FOCUS

No provision is made to vary the focus on this receiver.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

The Horizontal Frequency slug is used for the Horizontal Hold. (For location, see "Tube Placement Chart".)

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

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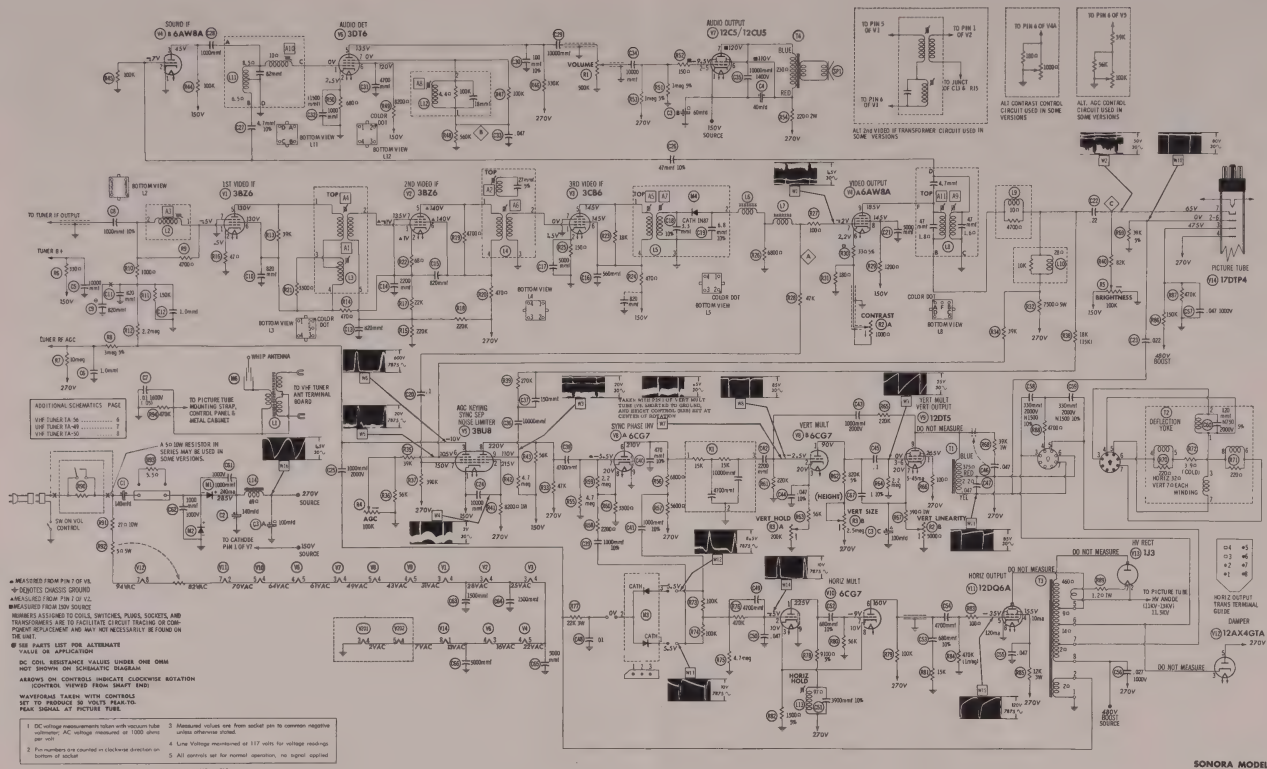
SONORA MODEL
560P173
SOUND IF
V4 6AW8A
AUDIO DET
V5 3D16
AUDIO OUTPUT
V12 12C5/12CU5
1ST VIDEO IF
V1 3BZ6
2ND VIDEO IF
V2 3BZ6
3RD VIDEO IF
V3 3CB6
VIDEO OUTPUT
V6 6AW8A
TO TUNER IF OUTPUT
TUNER B+
TUNER RF AGC
WHIP ANTENNA
TO VHF TUNER ANT TERMINAL BOARD
TO PICTURE TUBE MOUNTING STRAP, CONTROL PANEL & METAL CABINET
ADDITIONAL SCHEMATICS PAGE
VHF TUNER TA-56 6
VHF TUNER TA-49 7
VHF TUNER TA-50 7
A 50 OHM RESISTOR IN SERIES MAY BE USED IN SOME VERSIONS.
ON-ON VOL CONTROL
TO CATHODE PIN 1 OF V7
270V SOURCE
150V SOURCE
AGC KEYING SYNC SEP NOISE LIMITER
V8 3BU8
AGC
SYNC PHASE INV
V9 6CG7
VERT MULT
V10 6CG7
VERT MULT VERT OUTPUT
V11 12DT5
DO NOT MEASURE
VERT HOLD
VERT SIZE
VERT LINEARITY
DEFLECTION YOKE
HORIZ 22Ω
VERT 7.4Ω EACH WINDING
BRIGHTNESS
CONTRAST
PICTURE TUBE
V14 17DTP4
HORIZ MULT
V13 6CG7
HORIZ OUTPUT
V11 12DQ6A
HORIZ HOLD
HV RECT
V15 1J3
TO PICTURE TUBE HV ANODE (1.5KV-13KV) 11.5KV
DAMPER
V16 12AX4GTA
HORIZ OUTPUT TRANS TERMINAL GUIDE
400V BOOST SOURCE
TO PIN 5 OF V1
TO PIN 1 OF V2
TO PIN 6 OF V1
TO JUNCT ION C13 & R15
ALT 2nd VIDEO IF TRANSFORMER CIRCUIT USED IN SOME VERSIONS
TO PIN 6 OF V4A
ALT. CONTRAST CONTROL CIRCUIT USED IN SOME VERSIONS
TO PIN 6 OF V3
ALT. AGC CONTROL CIRCUIT USED IN SOME VERSIONS
TAKEN WITH 100 OHM 1 VOLT MULT PROBE (SMALL SIGNAL AND BRIGHT CONTROL SHOULD BE AT CENTER OF ROTATION)
▲ MEASURED FROM PIN 7 OF V8.
⊕ CHASSIS GROUND
▲ MEASURED FROM PIN 7 OF V2.
■ MEASURED FROM 150V SOURCE
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM.
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 90 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE
1 DC voltage measurements taken with vacuum tube voltmeter. AC voltage measured at 1000 ohms per volt.
2 Pin numbers are counted in clockwise direction on bottom of socket
3 Measured values are from socket pin to common negative unless otherwise stated
4 Line Voltage maintained at 117 volts for voltage readings
5 All controls set for normal operation, no signal applied
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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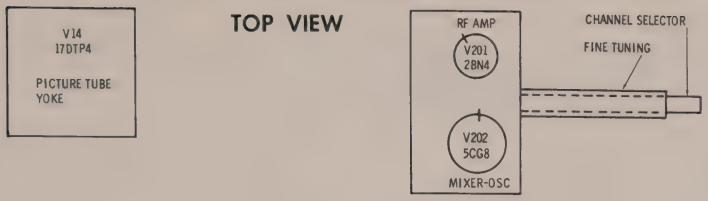
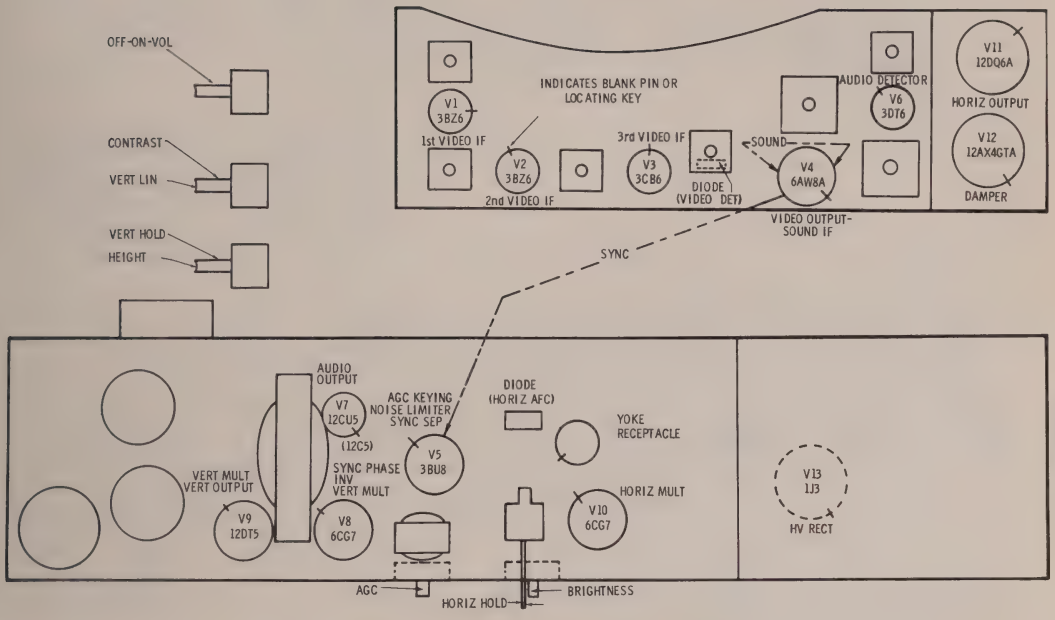
SONORA MODEL
560P173

TUBE PLACEMENT CHART

TOP VIEW





TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

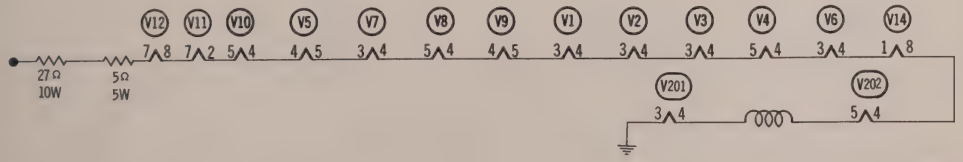
POWER SUPPLY FAILURE
No raster, no sound Fusible Resistor, Rect. (B+)

SWEEP FAILURE
No raster, has sound V10, V11, V12, V13, V14
No vertical deflection V8, V9
Poor vert. linearity or foldover V8, V9
Poor horiz. linearity or foldover V10, V11, V12
Narrow picture V10, V11, V12, Rect. (B+)
Vert. off freq. V8, V9
Horiz. off freq. V8, Diode (Horiz. AFC), V10

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, Diode (Video Det.), V4
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V14
Has pic, no sound V4, V6, V7
Overloaded picture V5

SYNC FAILURE
No vert. sync V5, V8
No horiz. sync V5, V8
No vert. or horiz. sync V5, V8

This receiver employs tubes used in a series filament network, an open filament in any tube will cause the set to be inoperative. (See circuit below.)



SONORA MODEL S60P173

FOLDER 2

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Use an ISOLATION TRANSFORMER TO PROTECT the Test Equipment.
The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: GENERAL CEMENT #8282, 8606, 8606L, 9295
WALSCO #2526, 2543, 2544, 2545

VIDEO IF ALIGNMENT

Set Contrast fully clockwise.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	Place a thin insulated metal strip between the Mixer-Osc. tube (V202), and tube shield. Connect the high side of sweep generator to the metal strip. Low side to chassis.	44MC (10MC Swp)	41.25MC	Any non-interfering channel	Vert. Amp. thru 47K to point (A). Low side to chassis. (Across Video Det. load)	A1	Adjust to place marker in 41.25MC trap notch. (See Fig. 1).
2.	"	"	"	47.25MC	"	"	A2	Adjust to place marker in other trap notch.
3.	"	"	"	42.75MC 45.75MC	"	"	Mixer Plate Coil & A3 thru A7	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. Adjust Mixer Plate Coil and A3 for maximum gain. A4 and A5 to shape high frequency side of response curve. A6 and A7 is adjusted to shape low frequency side.

SOUND IF ALIGNMENT

Connect an output meter across speaker voice coil.
Connect the DC probe of the VTVM to point (B). Common to chassis. Tune in a strong air signal and adjust A8 for maximum output. If two peaks occur during this adjustment, use the one resulting in the highest reading on the VTVM.
Reduce the signal strength by disconnecting the antenna. Adjust A9 and A10 for maximum undistorted sound. Further reduce the signal by moving the antenna lead further away. Retouch A9 and A10 for maximum undistorted sound. Repeat entire procedure if necessary.

4.5MC TRAP ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.	.05mfd	High side to point (A). Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	AC probe to point (C). Common to chassis. (Use 0-10VAC scale).	All	Adjust for MINIMUM deflection.

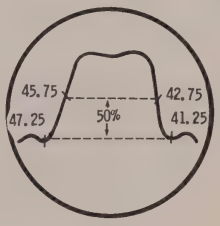


FIG. 1

TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: A201 thru A212 ..... GENERAL CEMENT #8282, 8606, 8606-L, 9091
WALSCO #2526, 2541, 2542, 2543, 2544
A213 thru A215 ..... GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528

VHF OSCILLATOR ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the Fine Tuning to the center of its range.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K across Video Det. load.	A201	Adjust to place sound marker in trap notch as in Fig. 201. Video marker should fall at 50%.
		207MC	205.25MC 209.75MC	12		A202	
		201MC	199.25MC 203.75MC	11		A203	
		195MC	193.25MC 197.75MC	10		A204	
		189MC	187.25MC 191.75MC	9		A205	
		183MC	181.25MC 185.75MC	8		A206	
		177MC	175.25MC 179.75MC	7		A207	
		85MC	83.25MC 87.75MC	6		A208	
		79MC	77.25MC 81.75MC	5		A209	
		69MC	67.25MC 71.75MC	4		A210	
		63MC	61.25MC 65.75MC	3		A211	
		57MC	55.25MC 59.75MC	2		A212	

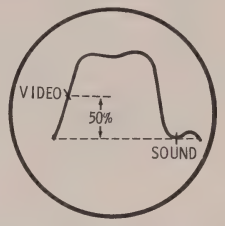


FIG. 201

VHF RF AND MIXER ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.
Connect the negative lead of a 4.5 volt bias supply to point (T). Positive to chassis.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
2.	Across antenna terminals with 120Ω in each lead.	195MC	193.25MC 197.75MC	10	Vert. Amp. thru 10K to point (U). Low side to chassis.	A213 A214 A215	Adjust A213 and A214 for maximum amplitude and symmetry with markers as shown in Fig. 202. Increase bias for MINIMUM amplitude of response curve. Without changing the bias adjust A215 to obtain MINIMUM response on the scope.
3.	"	213MC	211.25MC 215.75MC	13	"	A216	Adjust for maximum amplitude of response similar to Fig. 202. Adjust by expanding or compressing coil turns.
		207MC	205.25MC 209.75MC	12		A217	
		201MC	199.25MC 203.75MC	11		A218	
		195MC	193.25MC 197.75MC	10		A219	
		189MC	187.25MC 191.75MC	9		A220	
		183MC	181.25MC 185.75MC	8		A221	
		177MC	175.25MC 179.75MC	7		A222	
		85MC	83.25MC 87.75MC	6		A223	
		79MC	77.25MC 81.75MC	5		A224	
		69MC	67.25MC 71.75MC	4		A225	
		63MC	61.25MC 65.75MC	3		A226	
		57MC	55.25MC 59.75MC	2		A227	

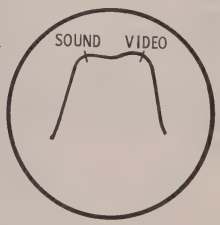
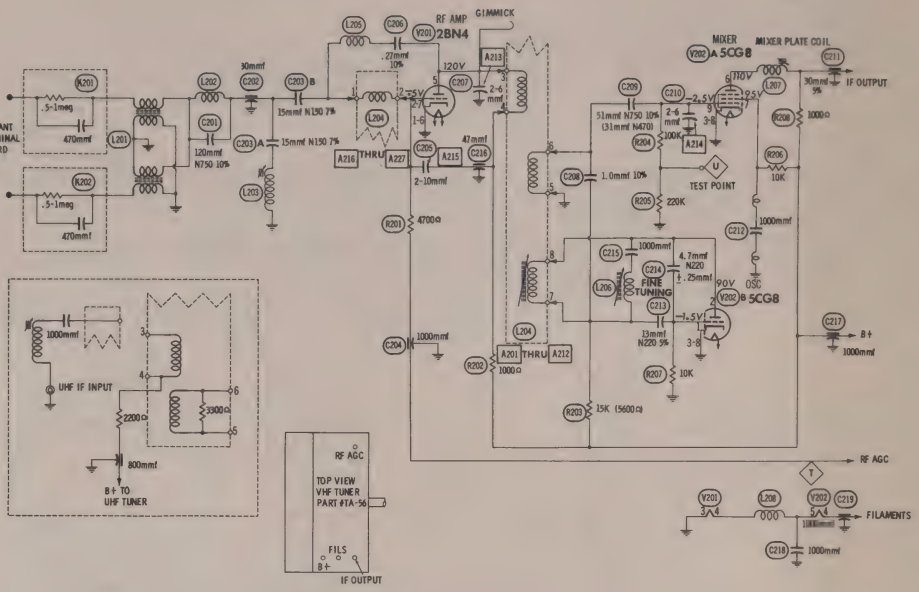


FIG. 202

UHF ALIGNMENT

This portion of the tuner has been properly aligned at the factory and is very stable. Alignment of this portion should not be attempted in the field.



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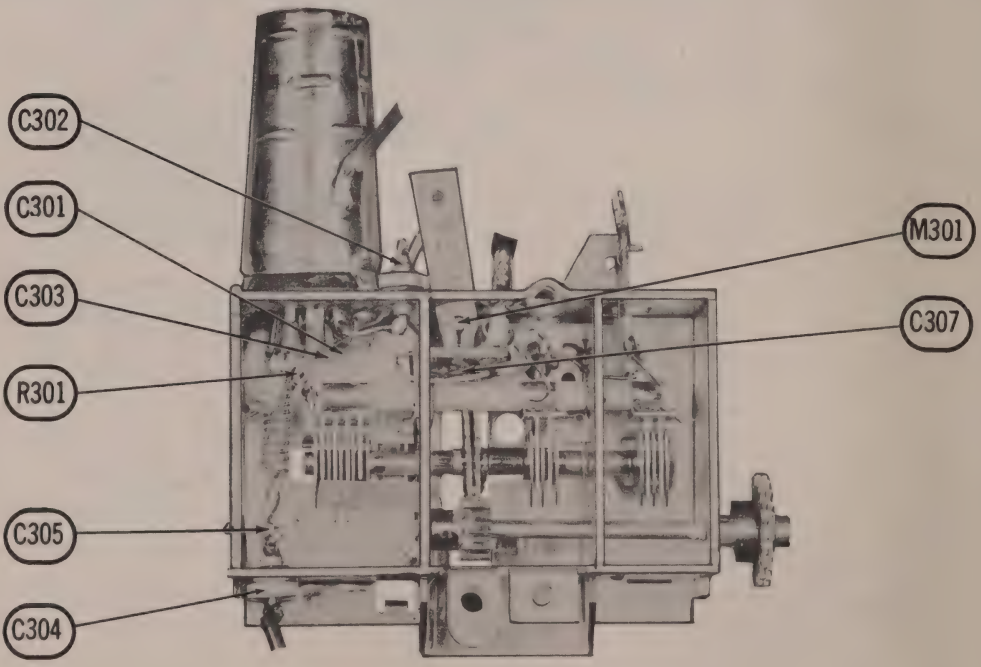
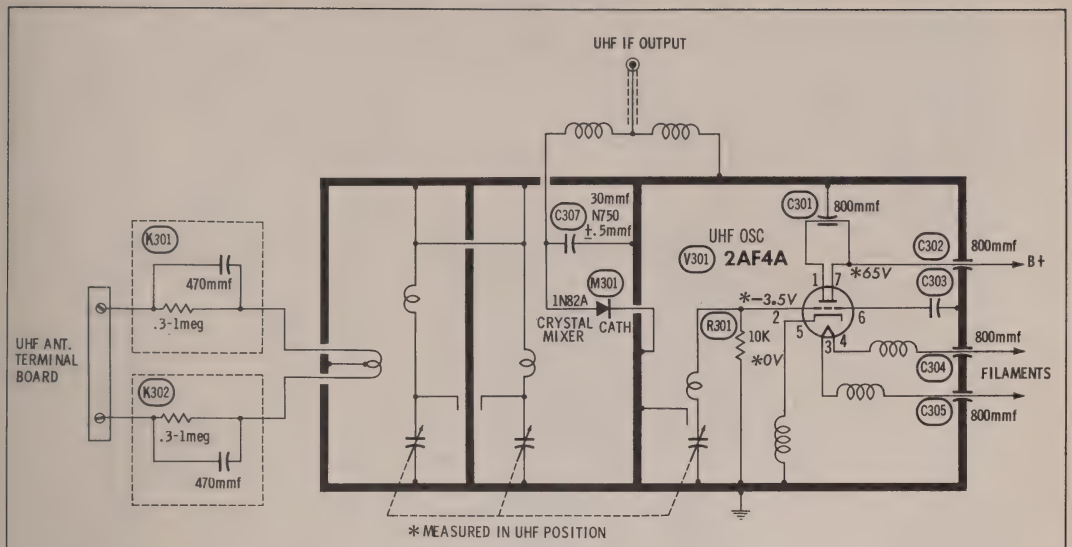
TUNER TA-56



TUNER TA-49

TUNER TA-49



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TUBES

CBS	GENERAL ELECTRIC	RAYTHEON	SYLVANIA

ITEM No.	USE	TYPE
V301	UHF Osc.	2AF4A

ITEM No.	USE	TYPE

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C301	800		EF-001	MFT-1000		CCF-102	CT280A	
C302	800		EF-001	MFT-1000		CCF-102	CT280A	
C303								
C304	800		EF-001	MFT-1000		CCF-102	CT280A	
C305	800		EF-001	MFT-1000		CCF-102	CT280A	
C306	1000		BPD-001	DD-102	BYA10D1M	CCD-102	GP210	
C307	30 N750 ±.5mmf							10TCU-Q30

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		PART No.	NOTES
	OHMS	WATT		
R301	10K			

ITEM No.	RATING		PART No.	NOTES
	OHMS	WATT		

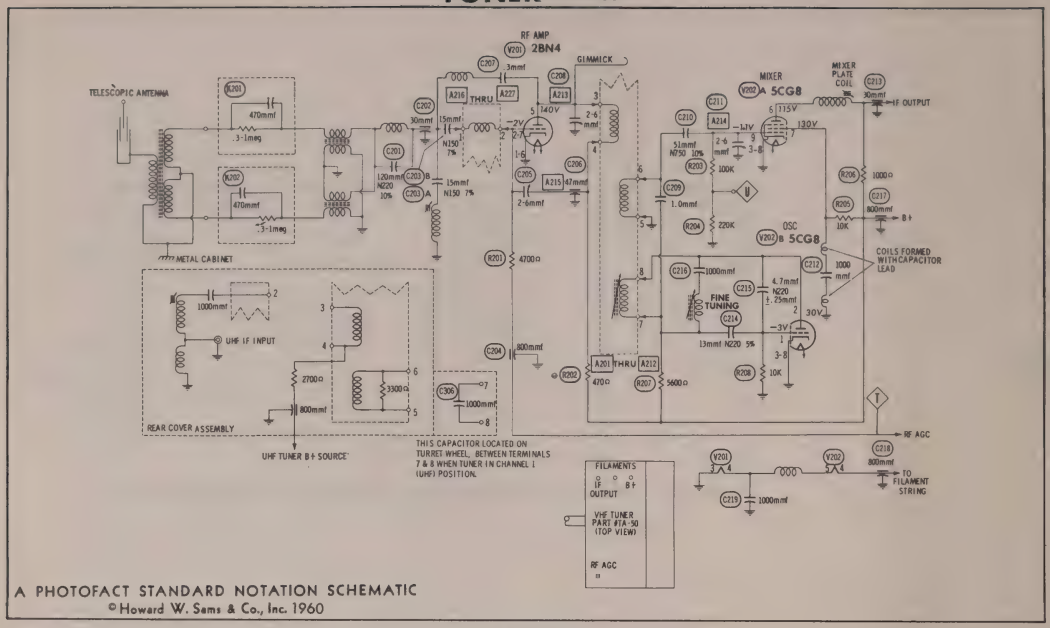
COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	PART No.	REPLACEMENT DATA	
K301	UHF Antenna Isolation	470mmf, .3-1meg		Centralab	RC-471
				Sprague	AC1-1
K302	UHF Antenna Isolation	470mmf, .3-1meg		Centralab	RC-471
				Sprague	AC1-1

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M301	1N82A		1N82A	1N82A	1N82A	UHF Mixer (Clip-in)

TUNER TA-50



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TUBES

ITEM No.	CBS / GENERAL ELECTRIC USE	CBS / GENERAL ELECTRIC TYPE	ITEM No.	RAYTHEON / SYLVANIA USE	RAYTHEON / SYLVANIA TYPE
V201	RF Amplifier	2BN4	V202	Mixer - Osc.	5CG8

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	120 N220 10%	#13L-031				*		10TCR-T12
C202	30	#13M350U300N-02						
C203A	15 N150 7%	#13L8PG150N2				*		10TCP-Q15
B	15 N150 7%					*		10TCP-Q15
C204	800		EF-001	MFT-1000		CCF-102		
C205	2-6			829-6		VC-3	CT552	
C206	47		EF-000050	MFT-50				
C207	.3							
C208	2-6			829-6		VC-3	CT552	
C209	1		NPO-SI 1.0	TCZ-1			CNO-510	10TCC-V10
C210	51 N750 10%		N750-DI 47	TCN-51	C10Q51U	CCTN-470	CN7-447	10TCU-Q47
C211	2-6			829-6		VC-3	CT552	
C212	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	10TS-D10
C213	30	#13M350U300N-02						
C214	13 N220 5%	#13L8R130J				*		
C215	4.7 N220 ±25mmf	#13L8R47C				*		
C216	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	10TS-D10
C217	800		EF-001	MFT-100		CCF-102	CT280A	
C218	800		EF-001	MFT-1000		CCF-102	CT280A	
C219	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	10TS-D10

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
# STANDARD COIL Part Numbers.

RESISTORS

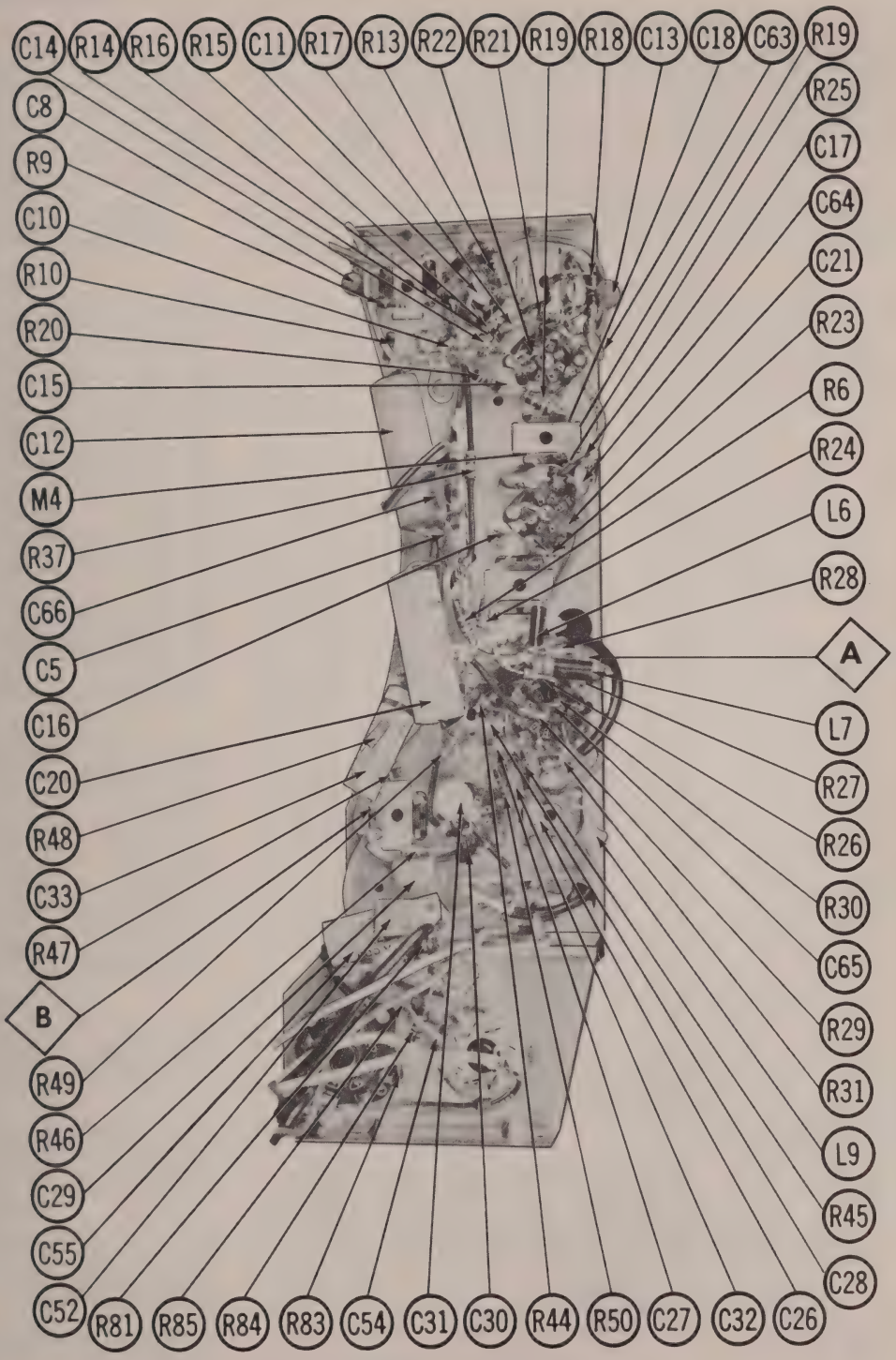
All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R201	4700Ω	
R202	470Ω ①	
R203	100K	
R204	220K	
R205	10K	
R206	1000Ω	
R207	5600Ω	
R208	10K	

① Some versions may use 1000Ω in this application.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	PART No.	REPLACEMENT DATA
K201	Antenna Isolation	470mmf, .3-1meg		Centralab RC-471 Sprague AC1-1
K202	Antenna Isolation	470mmf, .3-1meg		Centralab RC-471 Sprague AC1-1



UPPER CHASSIS - BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	CBS	GENERAL ELECTRIC	RAYTHEON	SYLVANIA	ITEM No.	CBS	GENERAL ELECTRIC	RAYTHEON	SYLVANIA
	USE	TYPE				USE	TYPE		
V1	1st Video IF Amp.	3DZ6			V7	Audio Output		12CU5/12C5	
V2	2nd Video IF Amp.	3DZ6			V8	Sync Phase Inv.-Vert.Multi		6CG7	
V3	3rd Video IF Amp.	3CB6			V9	Vert. Multi -Vert. Output		12DT5	
V4	Video Output-Sound IF Amp.	6AW8A			V10	Horiz. Multi		6CG7	
V5	AGC Keying-Sync Sep. - Noise Limiter	3DU8			V11	Horiz. Output		12DQ8A	
V6	Audio Detector	3DT8			V12	Damper		1S5/AZ9GTA	
					V13	HV Rect.		U3	

PICTURE TUBE

ITEM No.	REPLACEMENT DATA					NOTES
	SONORA Part No.	GENERAL ELECTRIC Part No.	RCA Part No.	RAYTHEON Part No.	SYLVANIA Part No.	
V14	17DTP24				17DTP24 ①	① "Silver Screen 85"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA					NOTES
	CAP	VOLT	SONORA Part No.	AEROVOX Part No.	CORNELL-DUBILIER Part No.	MALLORY Part No.	PYRAMID Part No.	SPRAGUE Part No.
C1	140	200	EC-84	AFH3R-37-15X	AG236	FP131	TM3-34	TVL-1540
C2	160	350	EC-118	AFH3R-37-15X	AG355	FP134	TM3-39	TVL-1594
C3A	4000	300	EC-130	AFH64-100-36	D0044	FP434.3	TM2-159	TVL-4781
B	440	200			BR1005			
C	4000	50						
C4	40	300	EC-113	PBR5B0	BR4025	TC36	TD-40-350	TVA-1511

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA						NOTES
			AEROVOX Part No.	CENTRALAB Part No.	CORNELL-DUBILIER Part No.	ELMENCO Part No.	MALLORY Part No.	SPRAGUE Part No.	
C9	10000		BP0-01	DD-103	BYA10E	CCD-103	B-110	5HK-E0	
C10	1.0 100V		P388R-1.0		CUB2W1		GEM-II	3TM-M1	
C7	.01 1600V	(.05mfd)*	P1864C5E-0	DDH5-103	CUB5E5	HDP-3-103	GEM-II	3TM-M1	
C8	1000 10%	Note 1	DI-1000	DD-103	1BA2E	CCD-103	GP310	10TB-D0	
C5	820		DI-820	DD-821	BYA10T83	CCD-821	B-310	5GA-T82	
C11	820		DI-820	DD-821	BYA10T83	CCD-821	B-382	5GA-T82	
C12	820		DI-820	DD-821	BYA10T83	CCD-821	B-382	5GA-T82	
C13	1.0 100V		P388M-1.0		CUB2W1		GEM-II	3TM-M1	
C14	820		DI-820	DD-821	BYA10T83	CCD-821	B-382	5GA-T82	
C24	2200		BP0-0022	DD-222	BYA10D22	CCD-222	B-332	5HK-D22	
C15	820		DI-820	DD-821	BYA10T83	CCD-821	B-382	5GA-T82	
C18	560		DI-560	DD-561	L20T56	CCD-561	B-356	5GA-T56	
C17	1000		BP0-006	DD-102	BYA10D1	CCD-102	B-310	5HK-D10	
C16	3.3 10%		NPO-II 3.3	TCZ-3R3	C10Y33C	CCTO-3R3	CNC-333	10TCC-Y33	
C19	5.0 10%		NPO-II 5.0	TCZ-5R0	C10Y50C	CCTO-5R0	CNC-500	10TCC-Y50	
C20	.1 800V		P8938-1	DF-104	CUB5F1	6DP-4-104	GEM-601	6TM-P1	
C21	5000		BP0-008	DD-502	BYA10E5	CCD-502	B-350	5HK-D50	
C23	.33 400V		P4838-33		CUB4P33	6DP-3-334	GEM-4023		
C22	.033 800V		P8938-.033	DD-303	CUB5E33	6DP-3-333	GEM-6123	6TM-HS3	
C25	10000		BP0-01	DD-103	BYA10E	CCD-103	B-110	5HK-E0	
C26	10000 2000V				BYA10E		B-110	5HK-E0	
C28	47 10%		NPO-II 47	TCH-470	C10Y47C	CCTO-470	GP347	10TCC-Y47	
C27	4.7 10%		NPO-II 4.7	TCZ-4R7	C10Y47C	CCTO-4R7	CNC-347	10TCC-Y47	
C29	1000		BP0-001	DD-102	BYA10D1	CCD-102	B-310	5HK-D10	
C30	10000		BP0-01	DD-103	BYA10D1	CCD-103	B-110	5HK-E0	
C31	100 5%		DI-101	DD-101	L20T1	CCD-101	B-347	5HK-D47	
C32	4700		BP0-0047	DD-472	BYA10D47M	CCD-473	B-347	5HK-D47	
C33	1000	(1500mmf)*	BP0-001	DD-102	BYA10D1	CCD-102	B-310	5HK-D10	
C34	.047 300V		P388N-047	DD-103	CUB3N47	6DP-3-473	GEM-4147	3TM-N47	
C35	.047 600V		BP0-05	DD-103	BYA10E	CCD-103	B-110	5HK-E0	
C36	10000 1400V		DAC-37	DDH5-103	HY3168	16DP-3-104	UAC-110	5L-E0	
C37	10000		BP0-01	DD-103	BYA10E	CCD-103	B-110	5HK-E0	
C38	100 .0005%		DI-101	DD-101	L20T10	CCD-101	B-310	5GA-T10	
C39	4700		BP0-0047	DD-472	BYA10D47M	CCD-473	B-347	5HK-D47	
C40	1000 10%		DI-1000	DD-102	1BA2E	CCD-102	GP310	10TB-D0	
C41	1000 10%		DI-1000	DD-102	1BA2E	CCD-102	GP310	10TB-D0	
C42	3200		BP0-0032	DD-322	BYA10D32	CCD-322	B-332	5HK-D32	
C43	4000 2000V		BP0-402	DDH5-402	HY3201	VCM-35-402	16Y-H20	BL-H0	
C44	.047 800V 10%		V84C6947-10%		P8938-47	6DP-3-473	GEM-4015	6TM-P47	
C45	.047 600V		P8938-.047	DF-104	CUB5E47	6DP-4-474	GEM-601	6TM-P1	
C46	.047 600V		P8938-047	DD-503	CUB5E47	6DP-3-473	GEM-6147	6TM-P47	
C47	.047 800V		P8938-047	DD-503	CUB5E47	6DP-3-473	GEM-6147	6TM-P47	
C48	.01 500V		P8938-01	DD-103	CUB5E	6DP-3-103	GEM-611	6TM-E	
C49	.047 600V		BP0-0047	DD-473	BYA10D47M	CCD-473	B-356	5HK-D47	
C50	.047 300V		P388N-047	DD-503	CUB3N47	6DP-3-473	GEM-6147	3TM-N47	
C51	1464-0019		1464-0019		HR3B59	CM-3G3-682K	MC3G83	MS-259	
C52	680 10%		1468-00068	DD-681	1R8T68	CM-3G3-681K	MC3J69	MS-368	
C53	680 10%		1468-00068	DD-681	1R8T68	CM-3G3-681K	MC3J69	MS-368	
C54	4700		BP0-0047	DD-472	BYA10D47M	CCD-473	B-347	5HK-D47	
C55	.047 800V		P8938-047	DD-503	CUB5E47	6DP-3-473	GEM-6147	6TM-P47	
C56	.027 1000V		P1864C5M-027	DD6-302	CUB1D3	16DP-3-303	GEM-6053	10TM-M3	
C57	.047 1000V		P388H-047		CUB3H47	16DP-3-473	GEM-10147	10TM-M47	
C58	330 2000V N1500 10%	#CC-119				**	**	**	
C59	330 2000V N1500 10%	#CC-119				**	**	**	
C60	120 2000V N750 5%					**	**	**	
C61	1000 100V		BP0-001	DD-102	BYA10D1	CCD-102	B-310	5HK-D10	
C62	1000 1000V		BP0-001	DD-102	BYA10D1	CCD-102	B-310	5HK-D10	
C63	500		BP0-0005	DD-501	BYA10D5	CCD-501	B-350	5HK-D50	
C64	1500		BP0-0015	DD-152	BYA10D15	CCD-152	B-15	5HK-D15	
C65	1500		BP0-0015	DD-152	BYA10D15	CCD-152	B-15	5HK-D15	
C66	5000		BP0-008	DD-502	BYA10D5	CCD-502	B-350	5HK-D50	
C67	5000		BP0-008	DD-502	BYA10D5	CCD-502	B-350	5HK-D50	
C67	.1 600V 10%		V84C6P1-10%		P388P1	6DP-4-104		6TM-P1	

* Alternate value. # Sonora Part Number. Note 1. Not used in some versions.
** Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SONORA Part No.	CENTRALAB Part No.	CLAROSTAT Part No.	CTS-IRC Part No.	MALLORY Part No.	
R1A	500K		VC-120		B12-123	P286A		Volume
B	Switch				S1C7	Not Req.		Push-Pull Off-On

PARTS LIST AND DESCRIPTIONS

CONTROLS (cont)

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	SONORA Part No.	CENTRALAB Part No.	CLAROSTAT Part No.	CTS-IRC Part No.	
R2A	1000Ω		VC-195	F1-5		† CJ-1129	Contrast
B	500Ω			R2-18			■ UZE4087
R3A	300K		VC-194	F1-33		† CJ-1130	Vert. Lin.
B	3.3meg			R2-76			Vert. Hold
R4A	100K		VC-54	BX-40	B47-100K-8	BU-138	Vert. Size
B	Shaft			Not Req.	Not Req.	TM4	AGC
R5A	100K		VC-54	BX-40	B47-100K-8	BU-138	Brightness
B	Shaft			Not Req.	Not Req.	TM4	

† "Concentrikit" Equivalent: R-18 Kit with Base Elements & Shafts: BIT-104, P1-104 (Panel)
BU-114, R18-005 (Rear)
■ "GTA-LCC" Equivalent: FA3BR, RU32L, GB8TSA, IB437.
■ "WTA-LCC" Equivalent: FA3BL, RU33L, GB8TSA, IB437.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS
R6	330Ω		R36	56K		R56	100Ω	
R7	10meg		R37	220K		R57	3900Ω 1W	
R8	3meg 5%		R38	18K	(18K)*	R58	39K 1W	
R9	470Ω		R39	270K		R59	39K 5%	
R10	4700Ω		R40	82K		R70	220Ω	
R11	180K		R41	6800Ω 1W		R71	220Ω	
R12	3.3meg		R42	4.7meg		R72	3.9Ω Cold	#ER-384
R13	39K		R43	56K		R73	100K	
R14	470Ω		R44	100K		R74	100K	
R15	220K		R45	100K		R75	4.7meg	
R16	470		R46	330K		R76	470K	
R17	22K		R47	100K		R77	22K 3W	
R18	220K		R48	560K		R78	3000Ω 5%	#ER-385
R19	4700Ω		R49	8200Ω		R79	100K	
R20	680Ω		R50	680Ω		R80	56K	
R21	3300Ω		R51	1meg 5%		R81	18K	
R22	68Ω		R52	150Ω		R82	10000 5%	
R23	18K		R53	1meg 5%		R83	100Ω	
R24	470Ω		R54	220K 1W		R84	470K	(1meg)*
R25	150Ω		R55	4.7meg		R85	12K 5W	
R26	6800Ω		R56	6800Ω		R86	150K	
R27	100Ω		R57	560Ω		R87	470K	
R28	47K		R58	1200Ω		R88	4700Ω	
R29	1200Ω		R59	2.5meg		R89	1.5Ω 1W	
R30	33Ω 5%	Note 1	R60	3300Ω		R90	470K	#F-9
R31	10Ω		R61	220K		R91	270 10W	#WR-36
R32	1500Ω 5W	#WR-48	R62	820K 5%		R92	5Ω 5W	#WR-43
R33	47K		R63	56K		R93	5.6Ω	#F-6-1
R34	39K		R64	2.5meg		R94	470K	
R35	33K		R65	220K				

* Source Part Number. * Alternate value. Note 1. Not used in some versions.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		SONORA Part No.	Gramer Part No.	Meissner Part No.	Merit Part No.	Miller Part No.	
L1	Ant. Matching Coil	L-157		B-383			
L3	1st Video IF	L-150		B-110			5HK-E0
L2A	2nd Video IF	L-103	T7-3002	17-3002		6231 *	
B	41.25MC Trap						
L4A	3rd Video IF	L-158	T7-3003	17-3003	TV-128	6233	
B	47.25MC Trap						
L5	4th Video IF	L-152		B-110			5HK-E0
L6	RF Choke	L-160					
L7	RF Choke	L-155					
L8A	Sound Take-Off	L-154					
B	4.5MC Trap						
L9	Series Peaking Coil	L-162					
L10	Shunt Peaking Coil	L-163					
L11	2nd Sound IF	L-167					
L12	Quadrature Coil	L-158A	T7-1031 ▲	17-1031 ▲	1611 ▲	SD-5 ▲	

* Disregard secondary winding. ① Wound on 470Ω resistor.
▲ Parallel with 100K resistor ② Wound on 10K resistor.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.		REPLACEMENT DATA						NOTES
	PRI.	SEC.	SONORA Part No.	Halldorson Part No.	Merit Part No.	Miller Part No.	Ram Part No.	Thordarson Part No.	
L13	P1Ω		L-156	HS-5 *	TV-153 *	6310 *	H-102 *	HS-5 *	Horiz. Stabilizer * Enlarge mounting hole.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE @ CURRENT 1000 ~Cy.	SONORA Part No.	Halldorson Part No.	Merit Part No.	Ram Part No.	Stancor Part No.	Thordarson Part No.	Triad Part No.
L24	.340A	49Ω	1 Hy.	FC-5B						

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA							
		SONORA Part No.	Halldorson Part No.	Merit Part No.	Ram Part No.	Rogers Part No.	Stancor Part No.	Thordarson Part No.	Triad Part No.
T1	Vert. Output	TR-50B	36614		T910			36614	A-142K
T2	Yoke-Horiz.(19.7MH) (110°)-Vert. (2.5MH) Rear Cover & Centering Device	L-149B ①②③	Y-53 ①②③		Y-110 ①②③		DY-37A ①③	Y-52 ①②③	Y-60 & Y79-2(2)③ YC-110
	Yoke Clamp	MP-165							
T3	Horiz. Output	ST-58 TR-51A	FLY-137	HVO-152 *	X162 *	EFRT12 *	HO-304 *	FLY-137	D-151R *

① Use original rear cover, centering device, and yoke clamp. ④ Connect yoke terminal #3 to yoke plug pin #8, yoke #1 and #2 to plug #4, yoke #10 to plug #6.
② Use original yoke plug.
③ Connect as original.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

	ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	Ram Replacement Connections	Rogers Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
	5	5	5	5	5	5	5	5 & 4
	6	6	6	4	6	6	6	6
	7	7	7	3	7	7	7	7
	8	8	8	1	8	8	8	8
	2	1	2	2	7	2	1	2
	1	2	1	1	8	1	2	1
Special Notes					①			

① Remove one turn from filament winding.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	SONORA Part No.	Halldorson Part No.	Merit Part No.	Ram Part No.	Stancor Part No.	Thordarson Part No.	Triad Part No.
T4	2600Ω	3-4Ω	AT-52	24853	A-3025	AU-805	A-3332	24853	S-12X

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	SONORA Part No.	GUAM Part No.	
SP1	4"	PM	3-4Ω	SPK-49	4AOT	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	SONORA Part No.	REPLACEMENT DATA
IC1	Vert. Integrator	470mmf, 10000mmf, 15K, 15K	CC-120	

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	SONORA Part No.	INTERNATIONAL Part No.	ITT Part No.	SARKES TARZIAN Part No.	SYLVANIA Part No.	
M1	.340A	SR-14 ①	SD630 ②	HF904 ①	40K ①	SR500 ①	SR500 ① Silicon Type.
M2	.340A	SR-14 ①	SD630 ②	HF904 ①	40K ①	SR500 ①	② Dual Sel. Diode
M3		SR-15 ③	SD631 ③	HZ615 ③			③ Two required.

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA					NOTES
		SONORA Part No.	CBS Part No.	RAYTHEON Part No.	SYLVANIA Part No.		
M4	1N97	SC-32	1N97	1N97	1N90	Video Det. (Pigtail)	

MISCELLANEOUS

ITEM No.	PART NAME	SONORA Part No.	NOTES
M5	Tuner	TA-56	VHF with UHF Provisions
	Tuner	TA-50	VHF with UHF Provisions
	Tuner	TA-49	UHF
M6	Antenna	LA-168	Telescopic, JFD REPLACEMENT TA 985
	Antenna	LA-169	Telescopic, JFD REPLACEMENT TA 977

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

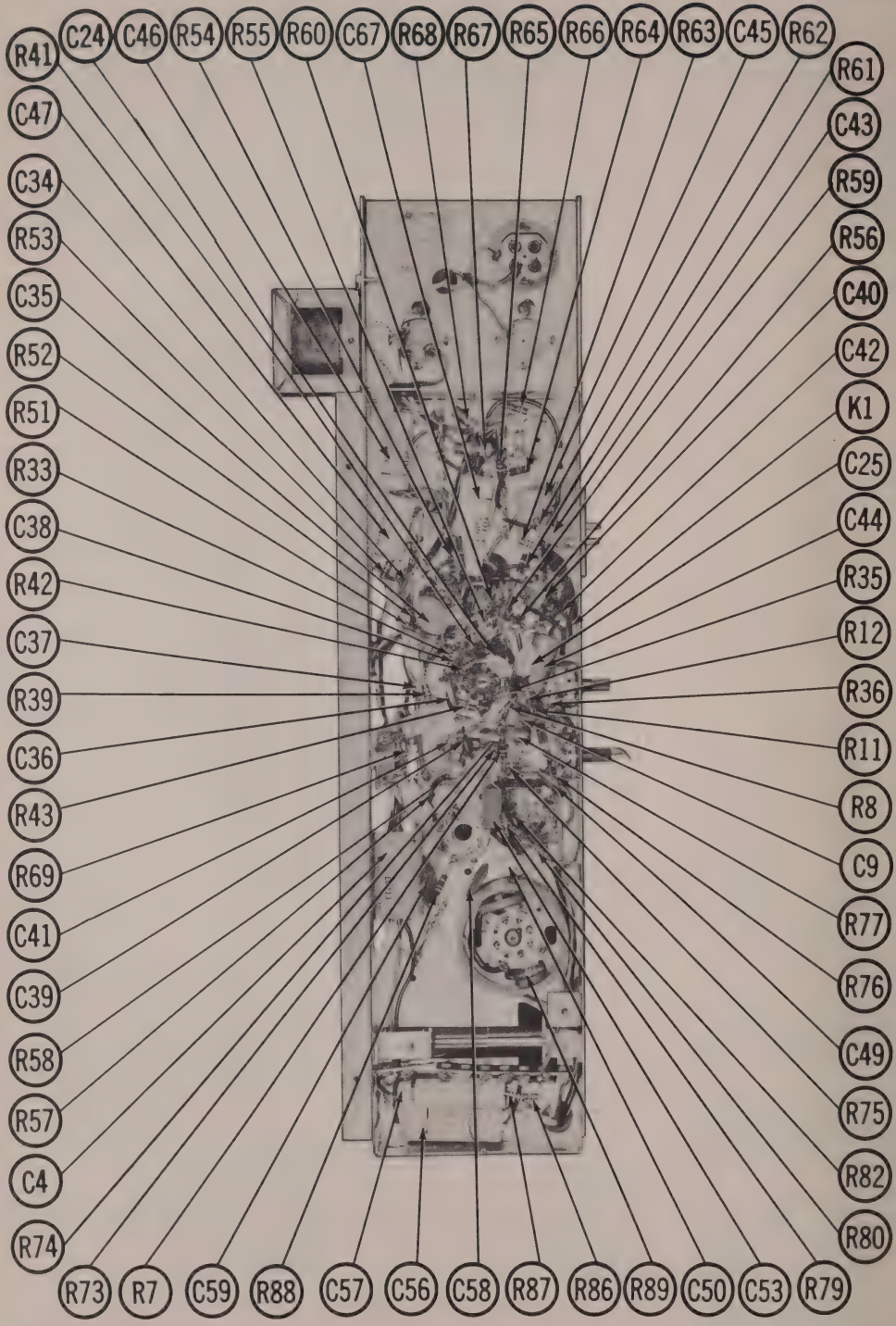
NAME	PART NO	DESCRIPTION
Safety Glass	MP-129	
Safety Glass & Mask	MP-103	

WIRING DATA

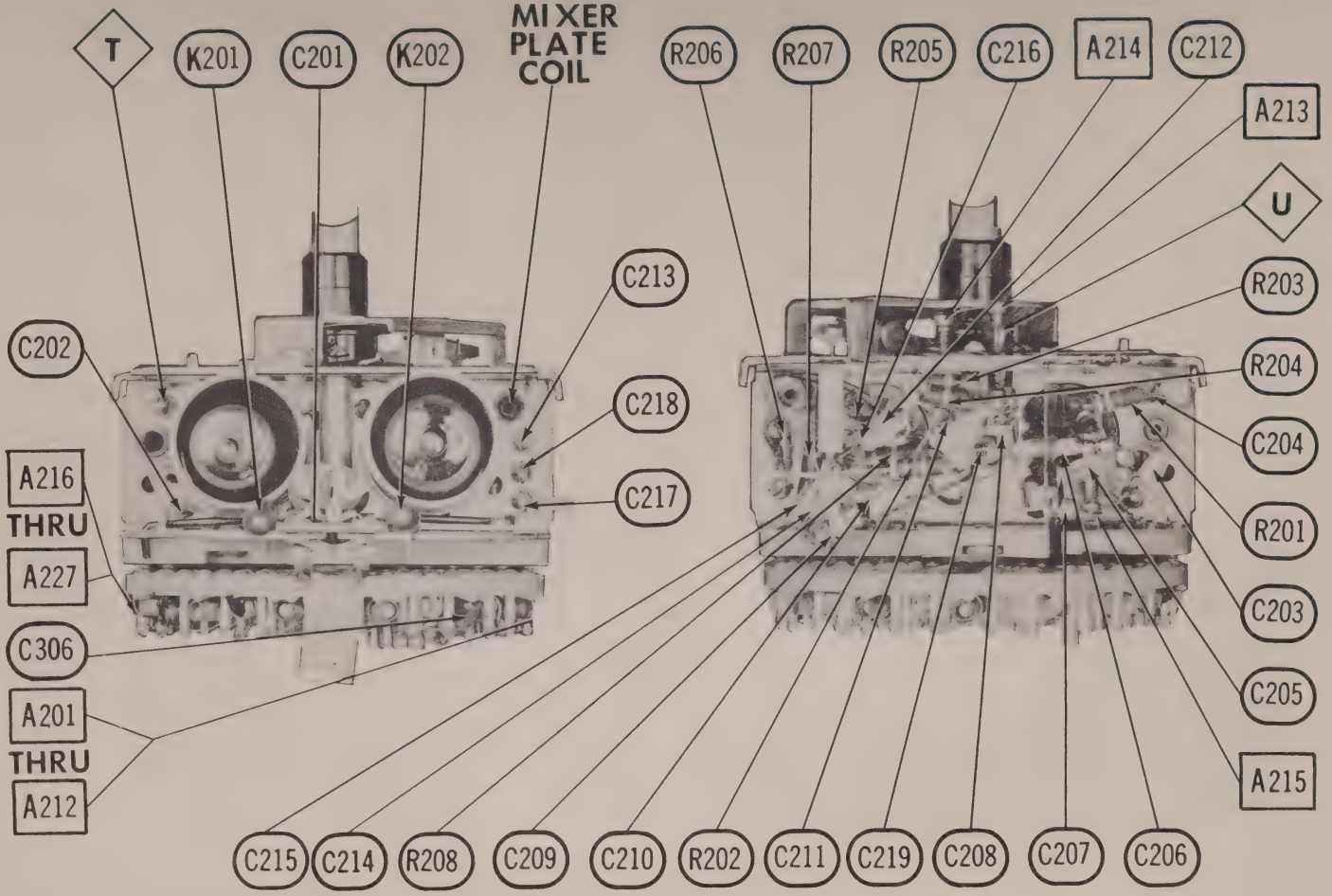
High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8895 (Single Conductor) 8731 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8534 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8183
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8484 (Flat) or 8464 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor

SONORA MODEL S60GP72

FOLDER 2



LOWER CHASSIS - BOTTOM VIEW



TUNER TA-50

SONORA MODEL
560P173

FOLDER 2

TUNER PARTS LIST AND DESCRIPTIONS

TA-56

TUBES

ITEM No.	USE	TYPE
V201	RF Amplifier	2BN4
V202	Mixer-Osc.	5CG8

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	120 N750 10%			TCZ-120	C10T12U	CCTN-121	CN7-312	10TCU-T12
C202	30	#13M350U300N-02						
C203A	15 N150 7%	#13L8PG150N2				* *		10TCP-Q15
B	15 N150 7%					* *		10TCP-Q15
C204	1000		EF-001	MFT-1000		CCF-102	CT280A	
C205	2-10	#31B-902-09		829-10				
C206	.27 10%	#13D-111-45						
C207	2-6			829-6		VC-3	CT552	
C208	1.0 10%		NPO-SI 1.0	TCZ-1			CNO-510	10TCC-V10
C209	51 N750 10%	(31MMF-N470)*		TCN-51		CCTN-470		
C210	2-6			829-6		VC-3	CT522	
C211	30 5%	#13M350U300J-01						
C212	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C213	13 N220 5%	#13L8R130J				* *		10TCR-Q12
C214	4.7 N220 ±.25mmf	#13L8R47C				* *		10TCR-V47
C215	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C216	47	#13M130U470J01		MFT-50				
C217	1000		EF-001	MFT-1000		CCF-102	CT280A	
C218	1000		BPD-001	DD-001	BYA10D1	CCD-102	B-210	5HK-D10
C219	1000		EF-001	MFT-1000		CCF-102	CT280A	

\# "Standard Coil" Part Number.
* Alternate Value
** Not normally in distributor's stock. Available thru distributor on order to manufacturer.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R201	4700Ω	
R202	1000Ω	
R203	15K	(5600Ω) *
R204	100K	
R205	220K	
R206	10K	
R207	10K	
R208	1000Ω	

* Alternate Value

COMPONENT COMBINATIONS

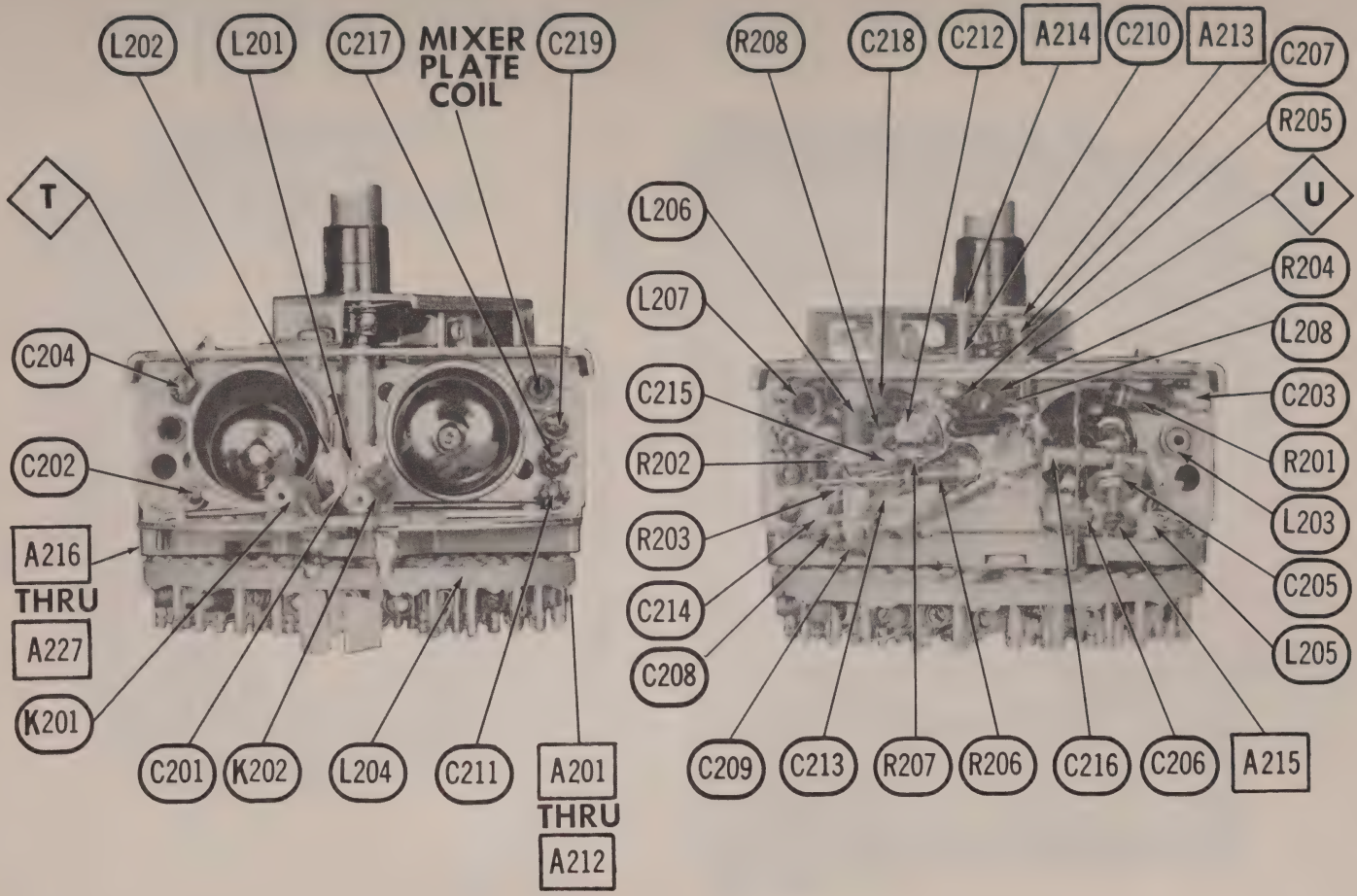
ITEM No.	USE	DESCRIPTION	PART No.	REPLACEMENT DATA
K201	Antenna Filter	470mmf, .5-1meg	13P-195	Centralab RC-471 Sprague AC1-1
K202	Antenna Filter	470mmf, .5-1meg	13P-195	Centralab RC-471 Sprague AC1-1

Note : Part numbers listed abive are "Standard Coil" Part numbers.

COILS (RF-IF)

ITEM No.	USE	PART No.	NOTES
L201	Ant. Trans.	31T-3397	
L202	RF Choke	34A-748	
L203	IF Trap Coil	34A-762	
L204	Ant., RF, Mixer Grid & Osc. Coils	31T-3454-034-000	Channel 2-13 Includes Rotor & Coil Assy.
L205	RF Choke	34A-1005	
L206	Fine Tuning Coil	34A-787-03	
L207	Mixer Plate Coil	31UA-580-017	
L208	Fil. Choke	31K-137-027	

Note: Part numbers listed above are "Standard Coil" Part numbers.



TUNER TA-56

S60P173

SONORA MODEL

CABINET—REAR VIEW

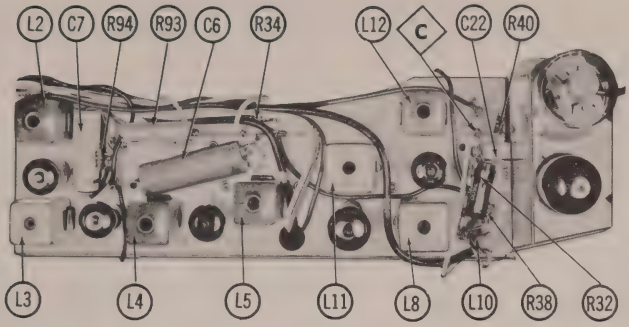
HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern.

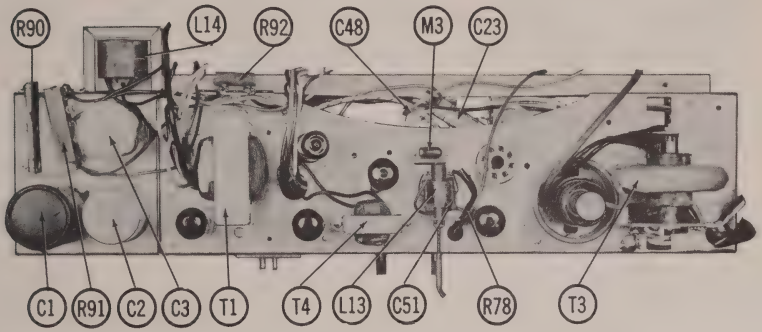
Set the Brightness and Contrast controls for a normal picture.

Turn the Horizontal Frequency (Hold) clockwise until the picture loses sync. It may be necessary to switch off channel and back again for picture to lose sync.

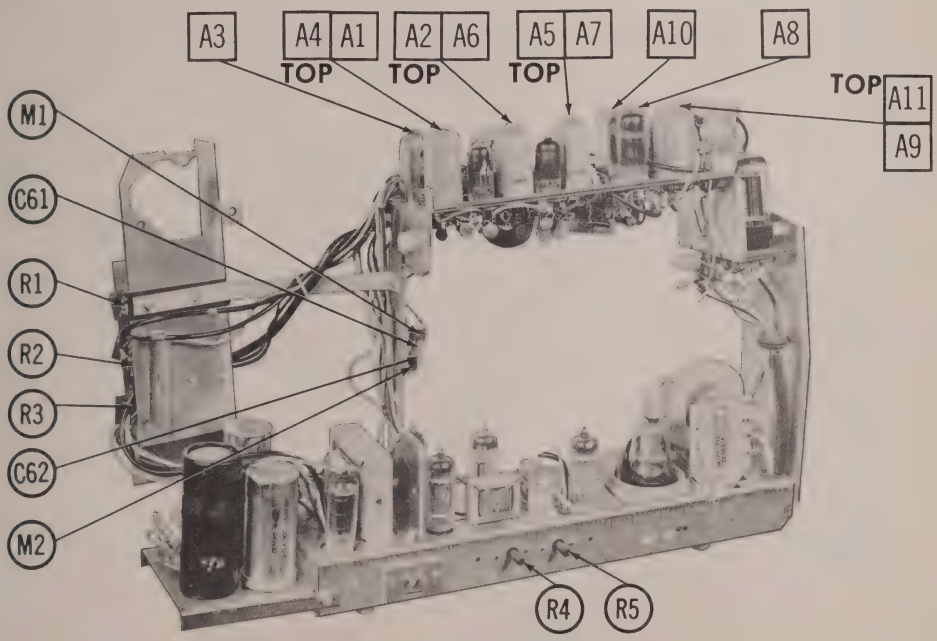
Turn the Horizontal Frequency slowly counterclockwise until the picture just falls into sync.



UPPER CHASSIS - TOP VIEW



LOWER CHASSIS - TOP VIEW



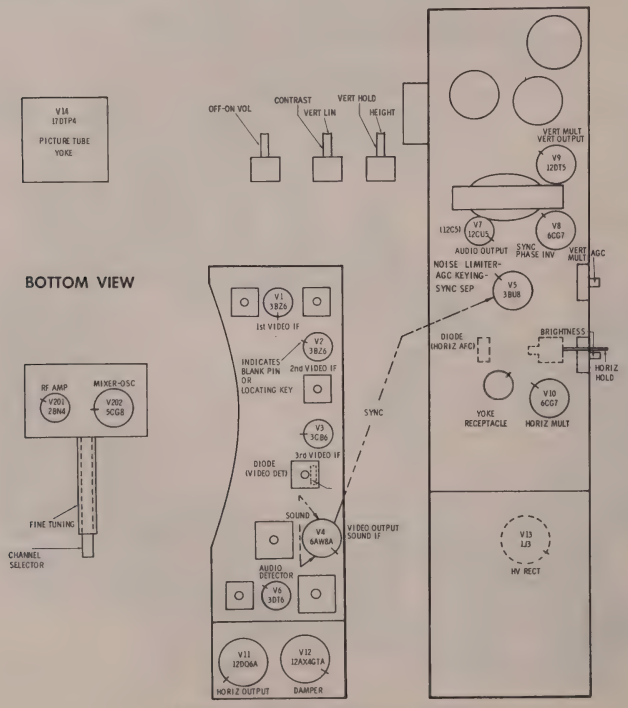
CHASSIS - REAR VIEW

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	3BZ6	140K	47Ω	6.5Ω	6Ω	▲ 470Ω	▲ 470Ω	0Ω		
V2	3BZ6	▲ 22K	▲ 68Ω	6Ω	5.5Ω	† 470Ω	† 470Ω	120K		
V3	3CB6	.1Ω	150Ω	5.5Ω	5Ω	■ 470Ω	■ 470Ω	0Ω		
V4	6AW8A	▯Ω	100K	■ 100K	3.5Ω	5Ω	● 45Ω	6900Ω	■ 1200Ω	† 7500Ω
V5	3BU8	■ 0Ω	† 8200Ω	2.3meg	14Ω	13Ω	† 35K	† 390K	† 40K	■ 4.7meg
V6	3DT6	18.5Ω	680Ω	3.5Ω	2.5Ω	† 330K	■ 8200Ω	560K		
V7	12CU5/ 12C5	¶	550K	13Ω	10.5Ω	550K	† 220Ω	† 450Ω		
V8	6CG7	● † 1.2meg	220K	● 110K	9Ω	10.5Ω	† 12K	2meg	3300Ω	0Ω
V9	12DT5	† 100Ω	NC	2.2meg	9Ω	6.5Ω	2.2meg	● 650Ω	NC	† 375Ω
V10	6CG7	† 9200Ω	2.8meg	1500Ω	14Ω	15.5Ω	† 100K	56K	1500Ω	0Ω
V11	12DQ6A	NC	15.5Ω	NC	† 12K	470K	TP	18Ω	0Ω	TOP CAP †9Ω
V12	12AX4GTA	NC	NC	¶ 700K	NC	† 0Ω	NC	21Ω	18Ω	
V13	1J3	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP †470Ω
V14	17DTP4	2.5Ω	39K	†150K	† 0Ω	NC	39K	● 120K	1.5Ω	
V201	2BN4	0Ω	3.7meg	0Ω	.5Ω	■ 1300Ω	0Ω	3.7meg		
V202	5CG8	10K	■ 5900Ω	0Ω	1.5Ω	.5Ω	■ 1300Ω	■ 10K	0Ω	320K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
▲ MEASURED FROM PIN 7 OF V2.
■ MEASURED FROM 150V SOURCE.
† MEASURED FROM 270V SOURCE
† MEASURED FROM PIN 3 OF V12.

NC NO CONNECTION.
TP TIE POINT.



TUBE PLACEMENT CHART

PHOTOFACT® Folder

AIRLINE MODELS
GAA-1024A, GAA-1036A

AIRLINE MODELS
GAA-1024A, GAA-1036A

MODEL GAA-1024A

AIRLINE MODELS
GAA-1024A, GAA-1036A

TRADE NAME	Airline Models GAA-1024A, GAA-1036A
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago 7, Illinois
TYPE SET	AC Operated 6 Tube AM Receiver With Stereo Amplifier And 4 Speed Automatic Record Changer
POWER SUPPLY	110 - 120 Volts AC, 60 Cycles
TUNING RANGE—BROADCAST	535 — 1620KC RATING 31 Watts, .34 Amp. @117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER — SEE V-M1201 — PHOTOFACT SET 436 FOLDER 18 OR RECORD CHANGER MANUAL RC-12

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools:
A1 thru A4.... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532
A5, A7..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520
A6..... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Loop	455KC (400∿ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.	"	1620KC	"	"	A5	"
3.	"	1400KC	Tune to 1400KC signal.	"		Set pointer to 140 on dial.
4.	"	600KC	Tune to 600KC signal.	"	A6	Adjust for maximum output while rocking tuning gang.
5.	"	1400KC	Tune to 1400KC signal.	"	A7	"

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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JP864

SET 497 FOLDER 3

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

TUBES

CBS • GENERAL ELECTRIC • RAYTHEON • SYLVANIA

ITEM No.	USE	TYPE
V1	AM Converter	12BE6
V2	IF Amplifier	12BA6
V3	Det.-AVC-Channel 2 AF Amp.	
V4	Channel 1 AF Amp.	12AV6
V5	Channel 1 Output	35C5
V6	Channel 2 Output	35C5

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	AIRLINE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲80	200	1034	AFHS4-02-60		FP420.46	TMQ-40	TVLS-4460*	
B	■40	150							
C	▲20	150							
D	25	25							

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	47 NPO 10%		NPO-DI 47	DTZ-47	C10Q47C	CCTO-470	CNO-447	10TCC-Q47
C3	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C4	.05 600V		P688N-05	DD-503	CUB6S5	6DP-3-503	GEM-615	6TM-S5
C5	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C6	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C7	100 N150					*		10TCP-T10
C8	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C9	250		DI-250	DD-251	L10T25	CCD-251	GB-325	10TS-T25
C10	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C11	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C12	250		DI-250	DD-251	L10T25	CCD-251	GP325	10TS-T25
C13	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C14	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S5
C15	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C16	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C17	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S5
C18	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C19	.05 600V		P688N-05	DD-503	CUB6S5	6DP-3-503	GEM-615	6TM-S5
C20	.05 600V		P688N-05	DD-503	CUB6S5	6DP-3-503	GEM-615	6TM-S5
C21	.05 100V		P288N-05	DD-503	CUB2S5	1DP-2-503	GEM-415	2TM-S5
C22	.05 400V		P288N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5

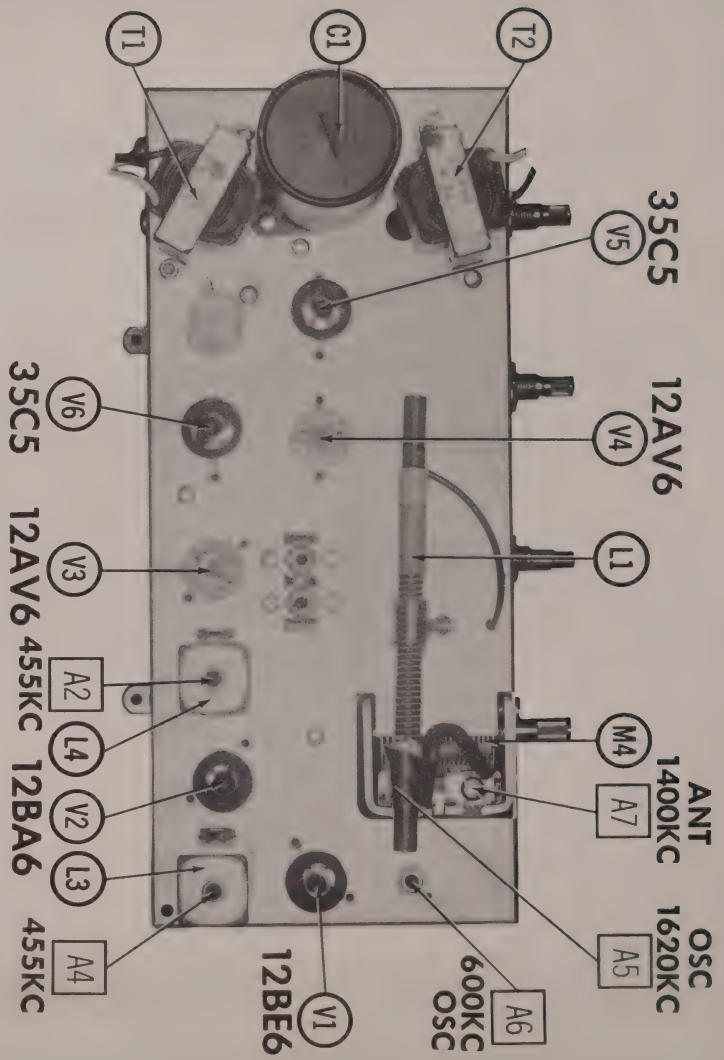
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA AIRLINE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	3meg	½	441	B-85			FA36A	Loudness, Channel 2
B	3meg	½		SR-85			RU36A	Loudness, Channel 1
C	Shaft			Not Req.			CS3500	
D	Switch			KR-1			US41	Power Off-On
R2A	500K	½	436	B-60				Balance, Channel 2
B	500K	½		SR-613				Balance, Channel 1
R3A	500K	½	440	B-60	AD47-500K-2		FA55A	Tone, Channel 2
B	500K	½		SR-60	Not Req.		RU55A	Tone, Channel 1
C	Shaft			Not Req.	KSS-3		CS3500	
D	Switch			(Note 1)	(Note 1)		(Note 1)	Function

Note 1. Use original switch (R3D).

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R4	22K	
R5	2, 2meg	
R6	150Ω	
R7	47K	
R8	470K	

ITEM No.	RATING	REMARKS
R9	10meg	
R10	220K	
R11	10meg	
R12	220K	
R13	82Ω 2W	

ITEM No.	RATING	REMARKS
R14	200Ω 10W	#623
R15	1500Ω 1W	
R16	27Ω 2W	#542
R17	270K	

Airline Part Number.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		AIRLINE PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick		14-9017	14-9017	BC-419			
L2	Osc. Coil	1416	14-1055	14-1055		70-OSC		
L3	Input IF Trans.	1405	16-6758	16-6758	BC-352	12-C1	RF-1	
L4	Output IF Trans.	1406	16-6758 *	16-6758 *	BC-353*	12-C2*	RF-2*	

* Connect 100mmf cap externally.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	AIRLINE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2600Ω	3-4Ω	1216A	24S53	A-3025	AU-605	A-3332	24S53	S-12X	
T2	2900Ω	3-4Ω	1216	24S53	A-3025	AU-605	A-3332	24S53	S-12X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	AIRLINE PART No.	QUAM PART No.	
SP1	4"x 6"	PM	3-4Ω	2648	46A1	
SP2	6"	PM	3-4Ω	2627	6A1	
SP3	4"	PM	6-8Ω	2647	4A1Z7	

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	AIRLINE PART No.	INTERNATIONAL PART No.	ITT PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.085A	2763	2E4	RE504	K200	SR200	Silicon Type

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA								
	AIRLINE PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		JENSEN PART No.		SONOTONE PART No.	
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE
M2	60-66	13TB	Not Req.	66	Not Req.	46	Not Req.	10T2-S	Not Req.

PHONO NEEDLE

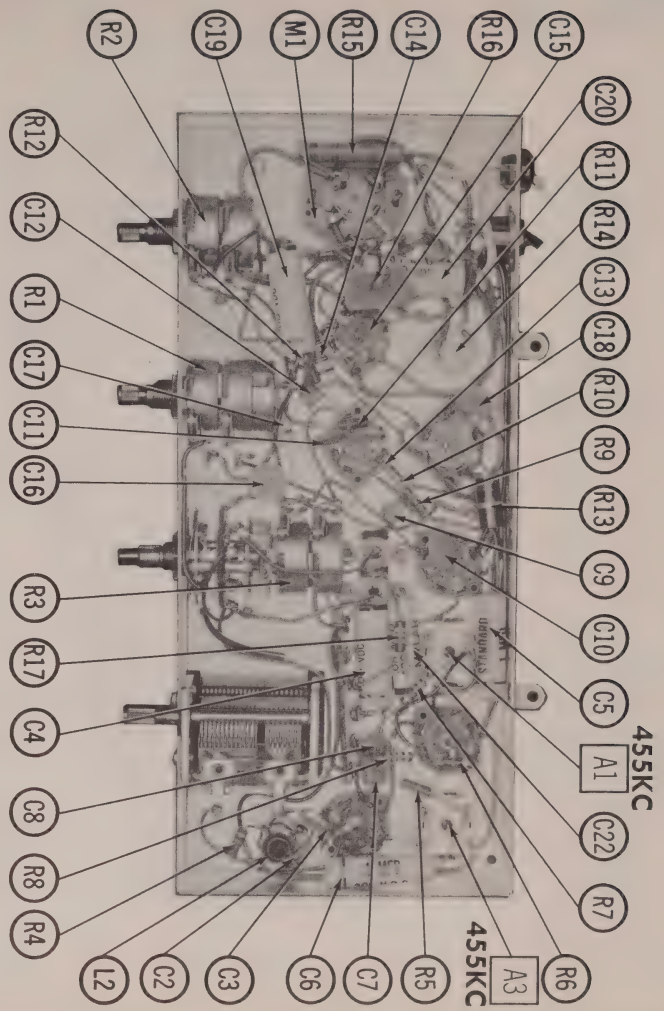
(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

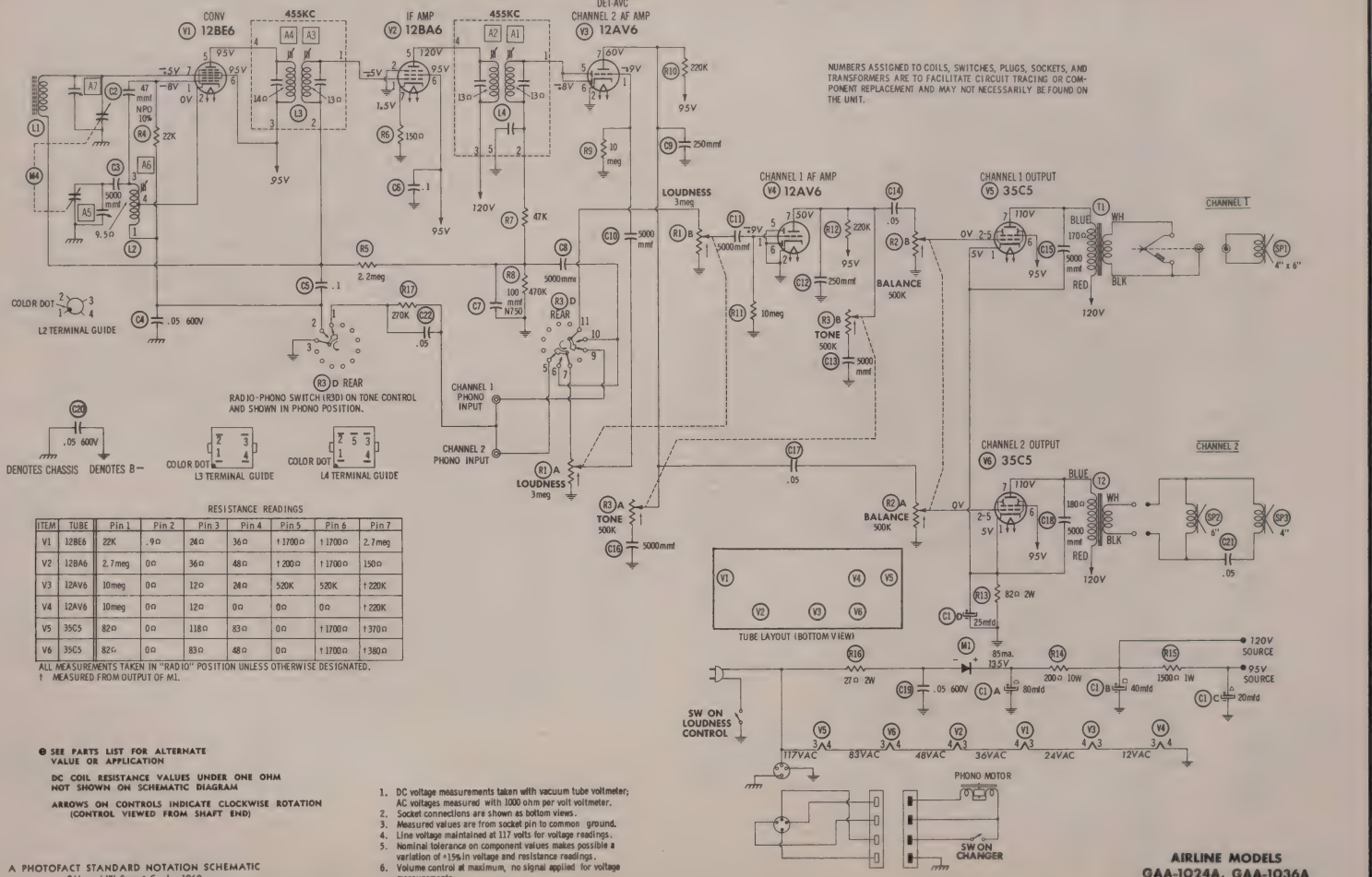
ITEM No.	REPLACEMENT DATA			REMARKS
	AIRLINE PART No.	CLEVITE WALCO PART No.	JENSEN PART No.	
M3		* W-203STDS †♦	* 46 †	† Jewel ♦ Diamond * Includes Cartridge

MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M4	Tuning Cap		2 Gang Ant. 32-392mmf, Osc. 16-132mmf

CHASSIS—BOTTOM VIEW





RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	.9Ω	24Ω	36Ω	†1700Ω	†1700Ω	2.7meg
V2	12BA6	2.7meg	0Ω	36Ω	48Ω	†200Ω	†1700Ω	150Ω
V3	12AV6	10meg	0Ω	12Ω	24Ω	520K	520K	†220K
V4	12AV6	10meg	0Ω	12Ω	0Ω	0Ω	0Ω	†220K
V5	35C5	82Ω	0Ω	118Ω	83Ω	0Ω	†1700Ω	†370Ω
V6	35C5	82Ω	0Ω	83Ω	48Ω	0Ω	†1700Ω	†380Ω

ALL MEASUREMENTS TAKEN IN "RADIO" POSITION UNLESS OTHERWISE DESIGNATED.
† MEASURED FROM OUTPUT OF M1.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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AIRLINE MODELS
GAA-1024A, GAA-1036A

PHOTOFACT® Folder

BOGEN MODEL M330

BOGEN MODEL M330

BOGEN MODEL M330

TRADE NAME	Bogen Model M330
MANUFACTURER	Bogen-Presto Co., A Div. of the Siegler Corp., P. O. Box 500, Paramus, N. J.
TYPE SET	AC Operated 7 Tube, 6 Input Audio Amplifier
POWER SUPPLY	110 - 120 (or) 125 Volts AC, 60 Cycles RATING 125 Watts, 1.2 Amp. @117 Volts AC

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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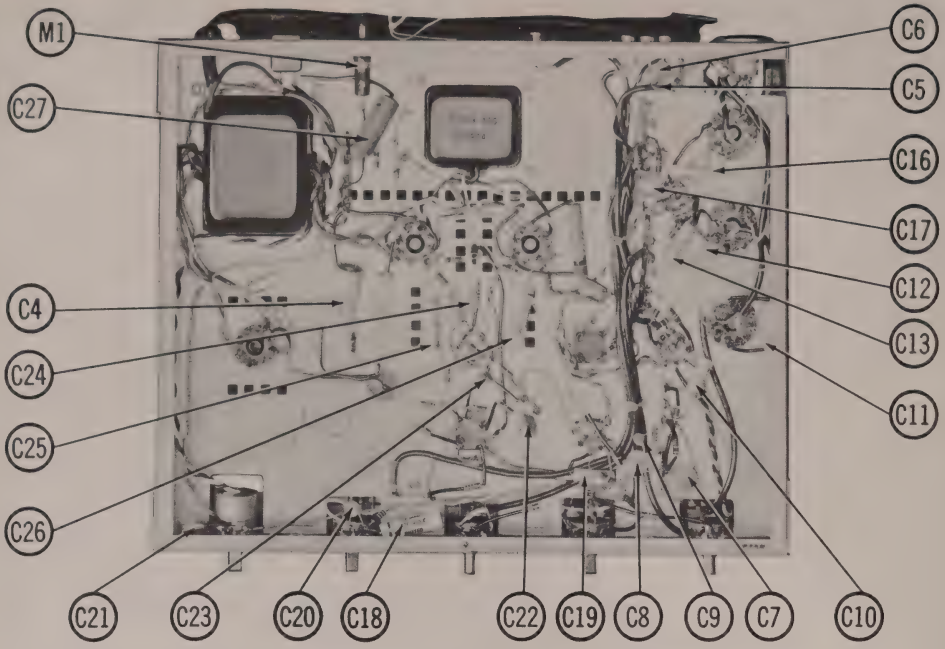
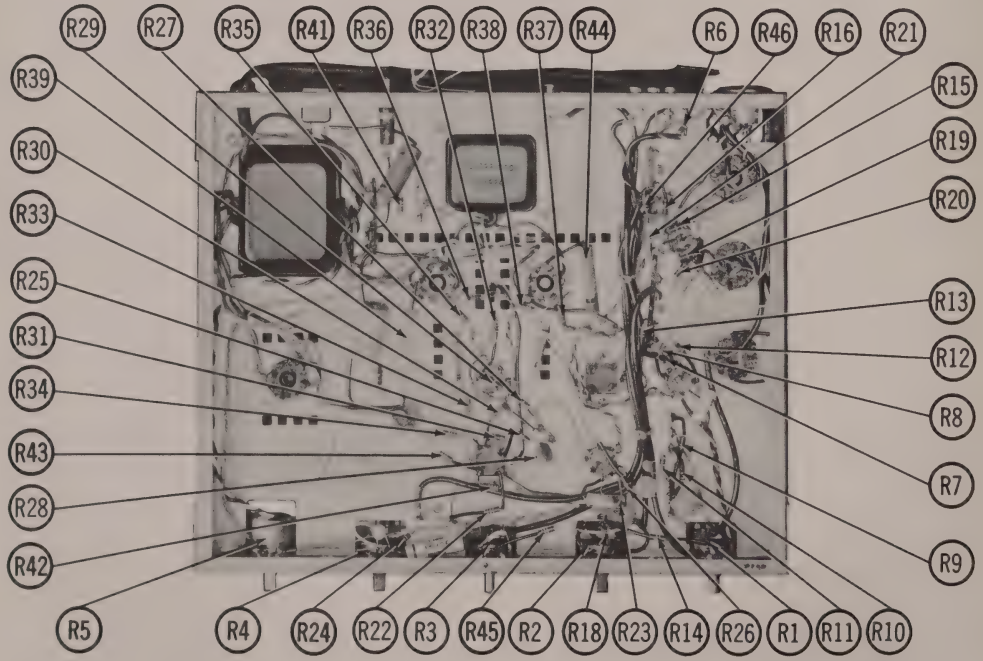


CHASSIS BOTTOM VIEW - CAPACITOR & MISC. IDENT.



CHASSIS BOTTOM VIEW - RESISTOR IDENT.

PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Phono Preamp. - Mic 1 Preamp.	ECC83/12AX7	V4	2nd AF Amplifier	ECC83/12AX7
V2	Mic 2 Preamp. - Mic 3 Preamp.	ECC83/12AX7	V5	Output	6L6GC
V3	AF Mixer-1st AF Amp.	12AU7A	V6	Output	6L6GC
			V7	Rectifier	GZ34/5AR4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA BOGEN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1	40	500		AFH1-61	XA0541	FP177	TMS-69	TVL-1950	
C2A	▲20	500			D0179.5	FP475	TMQ-12	TVL-4834	
B	■20	400					TD-20-500		
C	▲20	300							
D	20	350							
C3A	▲5	200		AFH4-09	D0080	WP433.6	TMQ-9	TVL-4759.7	Note 1
B	5	200							Note 1
C	■5	200							
D	▲5	200							
C4	50	50		PRS50V50	BR505	TC39	TD-50-50	TVA-1308	

Note 1. When C3A is 10mfd, C3B is not used.

FIXED CAPACITORS

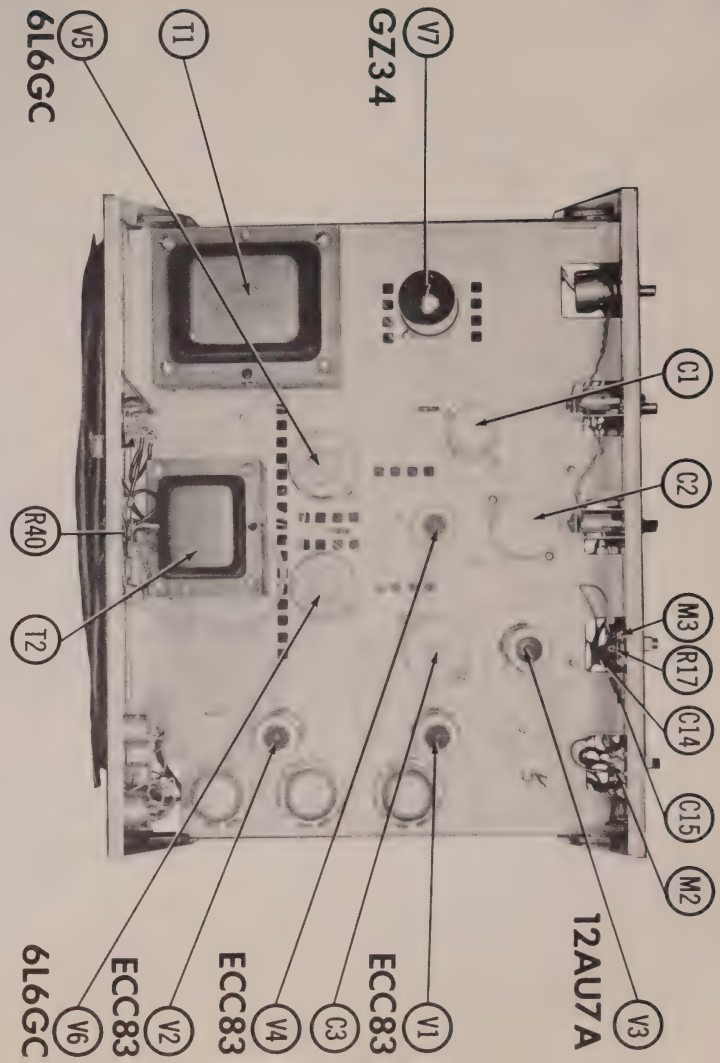
Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	68 10%		DI-68	DD-680	L10Q68	CCD-680	GP468	10TS-Q68
C6	.033 200V 10%		V84C2S33-10%		PM6S33	4DP-2-333		6TM-S33
C7	1500 10%		DI-1500	DD-152	PM6D15	CCD-152	GP215	10TS-D15
C8	15000		BPD-015	DD-153	BYA10SI5	CCD-153	B-115	5HK-S15
C9	680 10%		DI-680	DD-681	1R5T68	CCD-681	GP368	10TS-T68
C10	.047 200V		P288N-047	DD-503	CUB6S47	4DP-3-473	GEM-4147	2TM-S47
C11	.033 200V 10%		V84C2S33-10%		PM6S33	4DP-2-333		6TM-S33
C12	.033 200V 10%		V84C2S33-10%		PM6S33	4DP-2-333		6TM-S33
C13	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C14	4700 10%		DI-4700		PM6D47	CCD-472	JL-247	10TS-D47
C15	1500 10%		DI-1500	DD-152	PM6D15	CCD-152	GP215	10TS-D15
C16	.033 200V 10%		V84C2S33-10%		PM6S33	4DP-2-333		6TM-S33
C17	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C18	.1 200V 10%		V84C2P1-10%		PM2P1	2DP-3-104		2TM-P1
C19	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C20	820 10%		DI-820	DD-821	1R5T82	CCD-821	GP382	10TS-T82
C21	3300 10%		DI-3300		PM6D33	CCD-332	JL-332	10TS-D33
C22	1200 10%		DI-1200	DD-122	1R5D12	CCD-122	GP212	10TS-D12
C23	1000 10%		DI-1000	DD-102	PM6D1	CCD-102	GP210	10TS-D10
C24	10000		BPD-01	DD-103	BYA10SI	CCD-103	B-110	5HK-S10
C25	.1 400V 10%		V84C4P1-10%		PM4P1	4DP-3-104		4TM-P1
C26	.1 400V 10%		V84C4P1-10%		PM4P1	4DP-3-104		4TM-P1
C27	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA BOGEN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½	77-001-367	B-60	A47-500K-Z	Q13-133	U48	Input
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R2A	500K	½	77-001-367	B-60	A47-500K-Z	Q13-133	U48	Mic. 2
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R3A	500K	½	77-001-367	B-60	A47-500K-Z	Q13-133	U48	Mic. 3
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS (cont)

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	BOGEN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R4A	1.5meg	½	77-001-407	B-76	A47-2meg-Z	B13-138	RU155A	Bass
B	Shaft			Not Req.	FS-3	SK1	SL3500	
C	Bushing			Not Req.	Not Req.	Not Req.	SL38	
R5A	500K	½	V377	B-60-S	A47-500K-Z	Q13-133	U48	Treble
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			Not Req.	SWE-12	76-1	US-26	Power Off-On

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R6	47K	
R7	3.3meg	
R8	100K	
R9	150K	
R10	3.3meg	
R11	82K	
R12	100K	
R13	47K	
R14	220K	
R15	3.3meg	
R16	100K	
R17	180K	
R18	220K	
R19	3.3meg	

ITEM No.	RATING	REMARKS
R20	100K	
R21	47K	
R22	68K	
R23	1200Ω	
R24	68K	
R25	82K	
R26	1200Ω	
R27	6.8meg	
R28	1600Ω	
R29	1meg	
R30	82K	
R31	15K	
R32	47K	
R33	82K	

ITEM No.	RATING	REMARKS
R34	18K	
R35	2700Ω	
R36	100K	
R37	2700Ω	
R38	100K	
R39	200Ω 7W	
R40	1500Ω 2W	
R41	100K	
R42	33K	
R43	33K	
R44	1Ω	
R45	270K	
R46	47K	

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	BOGEN PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	125V ⓐ 1A Tap ⓐ 117V ⓐ 1.2A	680 VCT ⓐ .160A	5V ⓐ 1.9A	83-610-100				PM-8411		R-16B ①
	SEC. 3	SEC. 4	SEC. 5							
	6.3VCT ⓐ 3.3A									

① Drill New Mounting Holes.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC. 1	BOGEN PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	8200Ω CT	16Ω Tap ⓐ 8Ω, 4Ω	83-299-100							
		SEC. 2								
		230Ω								

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			BOGEN PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	1½A 125V			31301.5 (3AG 1½A 125V)	342001	MDL-1½	HKP

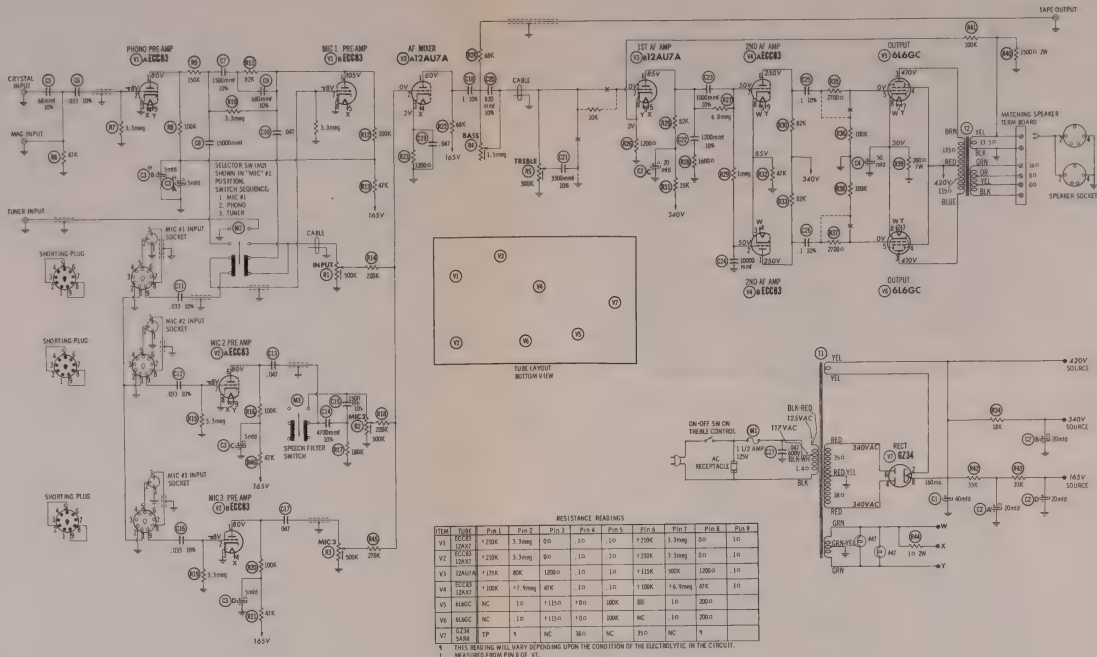
MISCELLANEOUS

ITEM No.	PART NAME	BOGEN PART No.	NOTES
M2	Switch		Selector (3 Position DP Slide Type)
M3	Switch		Speech Filter (DPDT Slide Type)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC83 12AX7	¶ 250K	3.3meg	0Ω	.10	.10	¶ 250K	3.3meg	0Ω	.10
V2	ECC83 12AX7	¶ 250K	3.3meg	0Ω	.10	.10	¶ 250K	3.3meg	0Ω	.10
V3	12AU7A	¶ 135K	80K	1200Ω	.10	.10	¶ 115K	500K	1200Ω	.10
V4	ECC83 12AX7	¶ 100K	¶ 7.9meg	47K	.10	.10	¶ 100K	¶ 6.9meg	47K	.10
V5	6L6GC	NC	.10	¶ 115Ω	¶ 0Ω	100K	NC	.10	200Ω	
V6	6L6GC	NC	.10	¶ 115Ω	¶ 0Ω	100K	NC	.10	200Ω	
V7	6Z4 SAME	TP	¶	NC	380	NC	350	NC	¶	

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 8 OF V7.
NC NO CONNECTION
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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BOGEN MODEL M330

PHOTOFACT® Folder with CIRCUITRACE®

CALRAD CATALOG NO. 60A183

CALRAD CATALOG NO. 60A183

TRADE NAME	Calrad (Catalog #60A183)
SUPPLIER	Burstein-Applebee Co., 1012-14 McGee Street, Kansas City 6, Mo.
TYPE SET	Battery Operated Transistorized Portable AM Receiver
POWER SUPPLY	9 Volts DC
RATING	6MA@9 Volts DC (No Signal, Min. Volume)
TUNING RANGE—BROADCAST	535 - 1650KC
	10MA@9 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools: A1, A2, A3, A5....GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291
WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538
A4, A6.....GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Loop	455KC (400~ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.	"	1600KC	1600KC	"	A4	"
3.	"	600KC	600KC	"	A5	"
4.	"	1400KC	Tune to 1400KC signal.	"	A6	Adjust for maximum output while rocking tuning gang.

DISASSEMBLY

1. Remove 2 screws from either side of case holding front trim.
2. Remove nut holding earphone jack.
3. Remove front escutcheon covering knobs.
4. Loosen screws holding knobs. Remove knobs.
5. Remove rear cover.
6. Remove one screw near center of printed board, and 3 Phillips screws holding printed board. Remove printed board.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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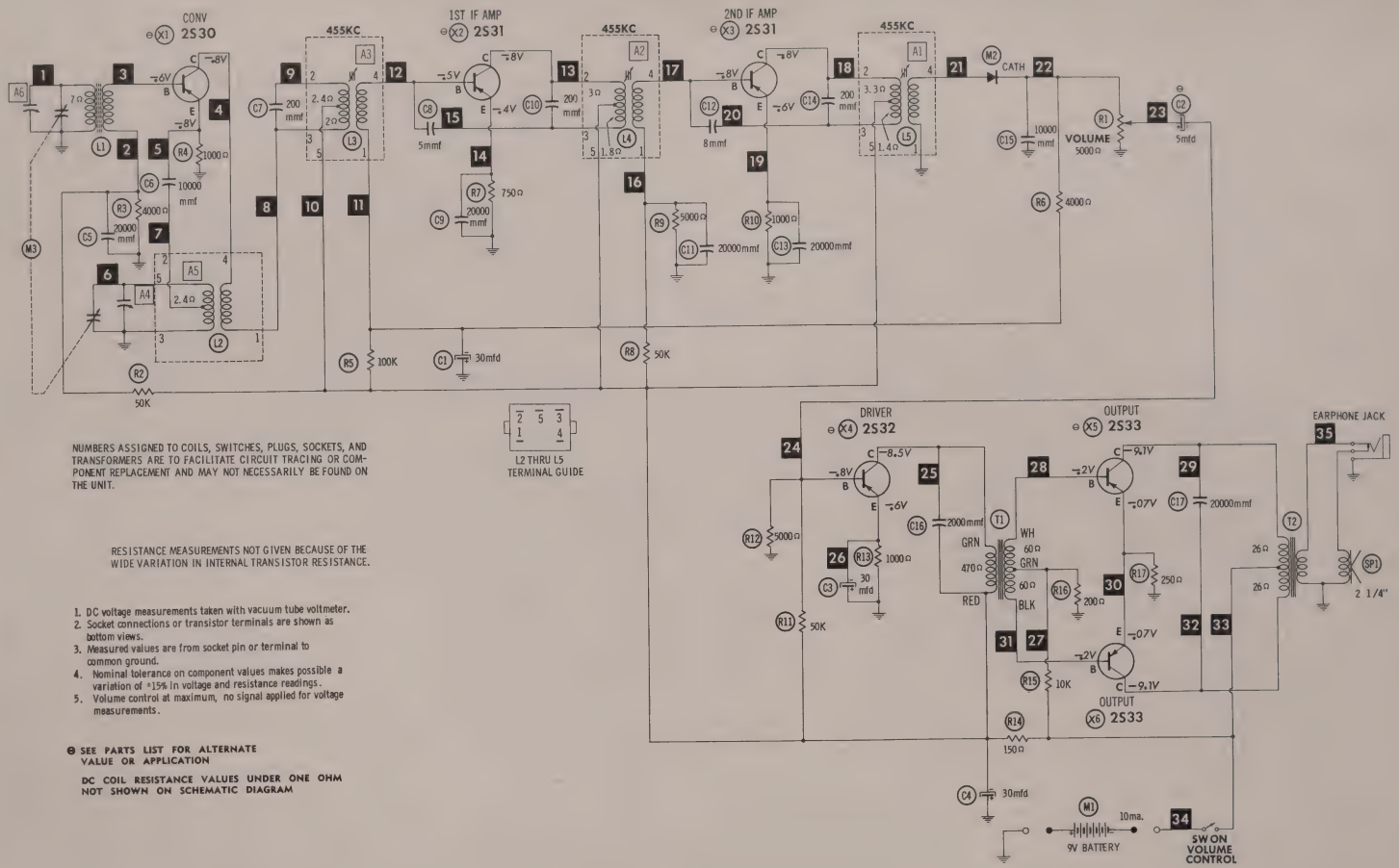
SET 497 FOLDER 5



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE®

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CALRAD CATALOG NO. 60A183

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2S30①	Converter		2N412	2N486		PNP
X2	2S31②	1st IF Amplifier		2N410	2N483		PNP
X3	2S31②	2nd IF Amplifier		2N410	2N483		PNP
X4	2S32③	Driver		2N406	2N362		PNP
X5	2S33④	Output		2N408	2N633		PNP
X6	2S33④	Output		2N408	2N633		PNP

① Alternate Type 2S52.
② Alternate Type 2S53.
③ Alternate Type 2S54.
④ Alternate Type 2S56.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	CALRAD PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	30	6		XPP-6030	NLW30-6	TT6X30	ML30-6	TE-1092	Note 1
C2	5	6		XPP-6005	NLW5-6	TT6X5	ML5-6	TE-1084	
C3	30	6		XPP-6030	NLW30-6	TT6X30	ML30-6	TE-1092	
C4	30	12		XPP-12030	NLW30-15	TT15X30	ML30-15	TE-1158	

Note 1. Some versions may use 3mfd@6V in this application.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	20000		C80V203AM	DDM-203	H-05S2		TA-120	TG-S20
C6	10000		C80V103AM	DDM-103	H-05S1		TA-110	TG-S10
C7	200		SI 200	D6-201	L10T2	CCD-201	GP320	10TS-T20
C8	5		NPO-SI 5.0	DTZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50
C9	20000		C80V203AM	DDM-203	H-05S2		TA-120	TG-S20
C10	200		SI 200	D6-201	L10T2	CCD-201	GP320	10TS-T20
C11	20000		C80V203AM	DDM-203	H-05S2		TA-120	TG-S20
C12	8		NPO-SI 8.2		C10V8C			10TCC-V82
C13	20000		C80V203AM	DDM-203	H-05S5		TA-120	TG-S20
C14	200		SI 200	D6-201	L10T2	CCD-201	GP320	10TS-T20
C15	10000		C80V103AM	DDM-103	H-05S1		TA-110	TG-S10
C16	2000		BPD-002	DD-202	BYA10D2	CCD-202	GP220	10TS-D20
C17	20000		C80V203AM	DDM-203	H-05S2		TA-120	TG-S20

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	CALRAD PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	5000Ω	1/4		B16-214				Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	50K	
R3	4000Ω	
R4	1000Ω	
R5	100K	
R6	4000Ω	
R7	750Ω	

ITEM No.	RATING	REMARKS
R8	50K	
R9	5000Ω	
R10	1000Ω	
R11	50K	
R12	5000Ω	
R13	1000Ω	

ITEM No.	RATING	REMARKS
R14	150Ω	
R15	10K	
R16	200Ω	
R17	250Ω	

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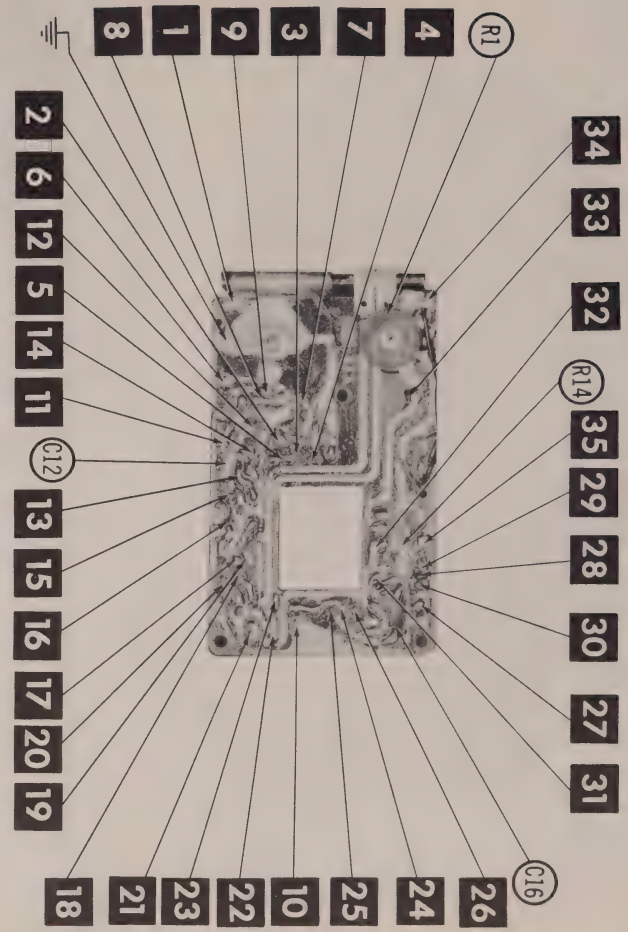


PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		CALRAD PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick							
L2	Osc. Coil							
L3	1st IF Trans.							
L4	2nd IF Trans.							
L5	3rd IF Trans.							

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	CALRAD PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1	1	YR-116						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	CALRAD PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	650Ω	6-8Ω	YR-118							

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	CALRAD PART No.	QUAM PART No.	
SP1	2 1/4"	PM	6-8Ω		22A06Z8	

BATTERIES

ITEM No.	VOLTAGE	CALRAD PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	9V	BL-006P		2U6		216		M-1604	

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		CALRAD PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2			1N60	1N60	1N60	Detector (Pigtail)

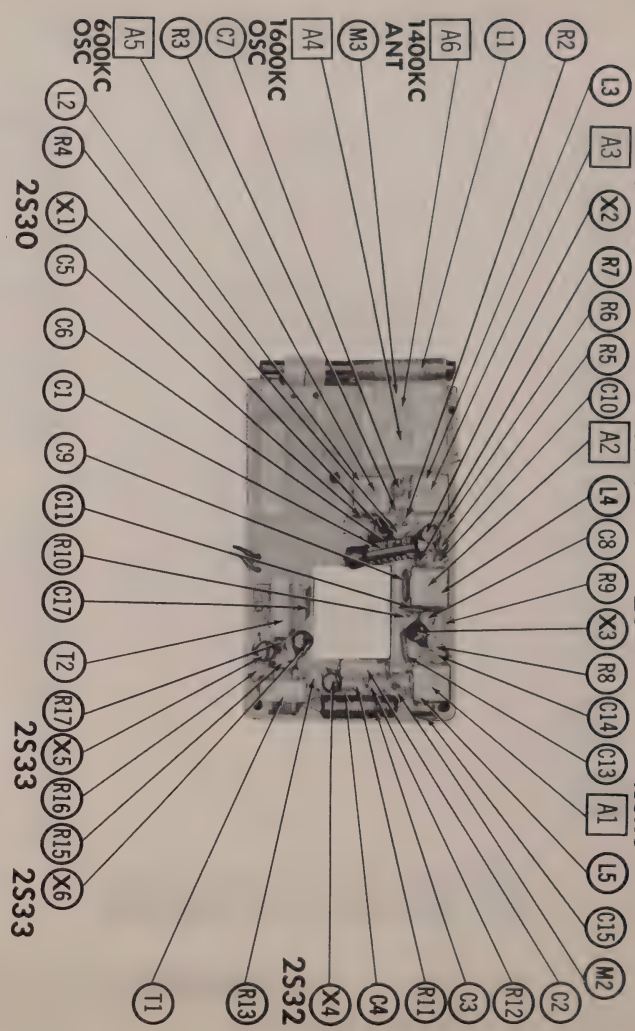
MISCELLANEOUS

ITEM No.	PART NAME	CALRAD PART No.	NOTES
M3	Tuning Cap		2 Gang

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW



PHOTOFACT® Folder with CIRCUITRACE®

CHEVROLET MODEL 988275
CORVAIR MODEL 988062

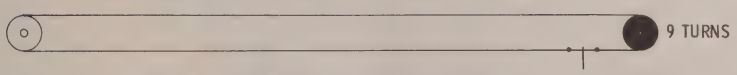
CHEVROLET MODEL 988275
CORVAIR MODEL 988062

CORVAIR 988062

TRADE NAME	Chevrolet Model 988275 (For 1960 Chevrolets), Corvair Model 988062 (For 1960 Corvairs)
MANUFACTURER	Delco Radio Div., G.M. Corp., Kokomo, Indiana
TYPE SET	Battery Operated 4 Tube, 1 Transistor Custom Built Automobile AM Receiver
POWER SUPPLY	12 Volt Storage Battery
TUNING RANGE—BROADCAST	535 — 1615KC RATING 1.9 Amp. @12.6 Volts DC

DIAL CORD STRINGING

TUNING GANG FULLY CLOCKWISE FRONT VIEW TUNING SHAFT



ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Suggested alignment tools:
A1 thru A4.... GENERAL CEMENT #9440
A5, A9, A10.. GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532
A6, A7, A8... GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of Converter. Low side to chassis.	262KC (400∿ Mod.)	High Freq. end stop.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
	Check setting of Oscillator core (A5). Rear of core should be 1 5/8" from mounting end of coil form.					
2.	High side thru 82mmf to antenna receptacle. Low side to chassis.	1615KC	"	"	A6, A7 A8	Adjust for maximum output.
3.	"	600KC	600KC Signal	"	A9, A10	"
4.	"	1615KC	1615KC Signal	"	A7, A8	"
5.	With radio installed in car and antenna fully extended, tune in a weak station near 900KC and adjust A8 for maximum output.					

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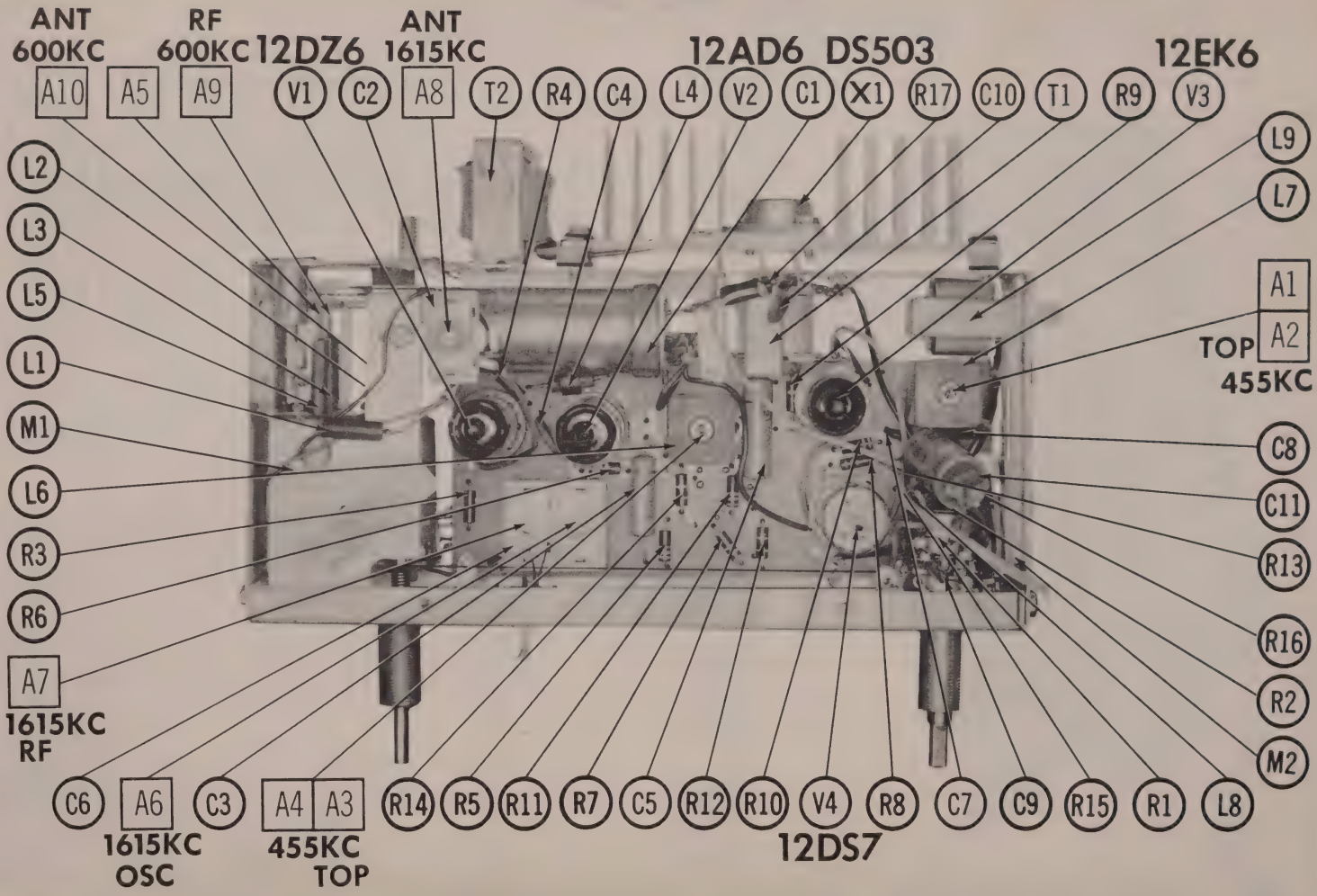
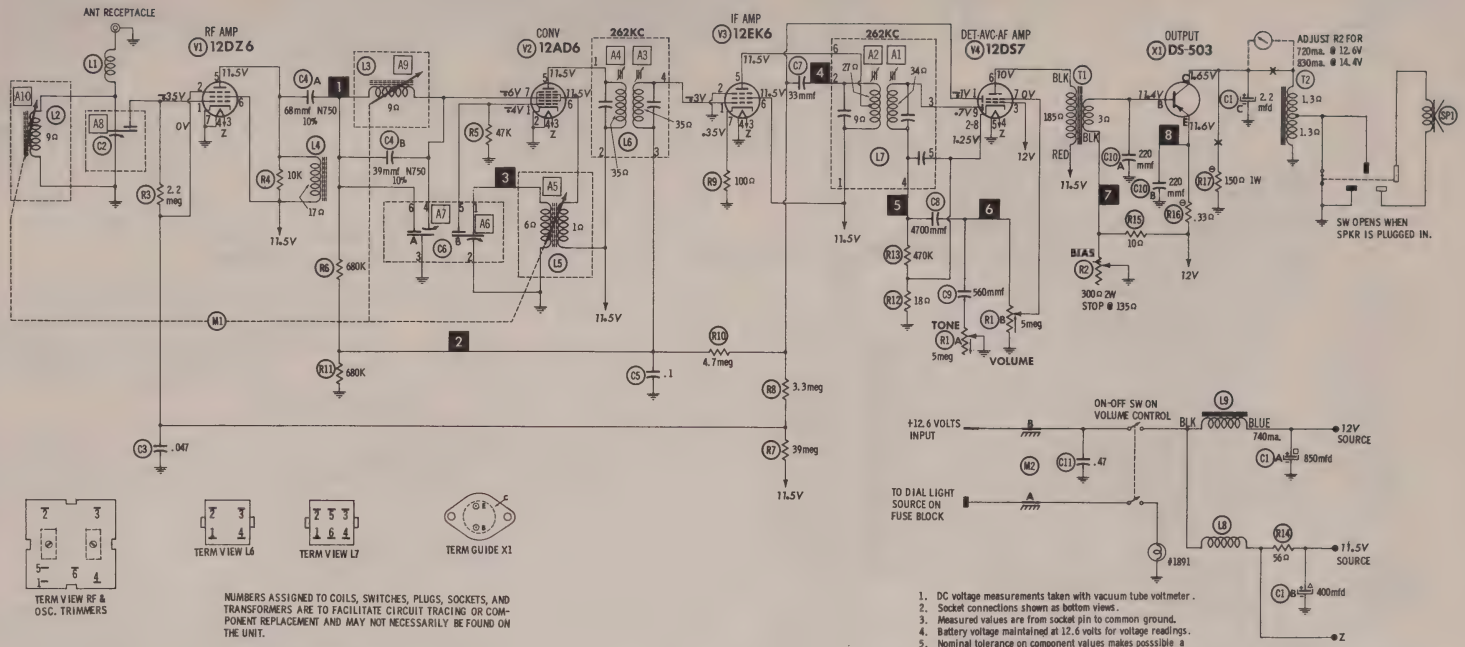
KD073, KD075

SET 497 FOLDER 6



CORVAIR MODEL 988062 — CHASSIS TOP VIEW



TERM VIEW RF & OSC. TRIMMERS

TERM VIEW L6

TERM VIEW L7

TERM GUIDE X1

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12DZ6	10.3meg	8.1meg	.1Ω	0Ω	75Ω	56Ω	0Ω		
V2	12AD6	47K	0Ω	.1Ω	0Ω	90Ω	57Ω	1.3meg		
V3	12EK6	680K	0Ω	.1Ω	0Ω	65Ω	56Ω	100Ω		
V4	12DS7	5meg	18Ω	.9Ω	.1Ω	0Ω	240Ω	0Ω	18Ω	470K

RESISTANCE MEASUREMENTS FOR X1 NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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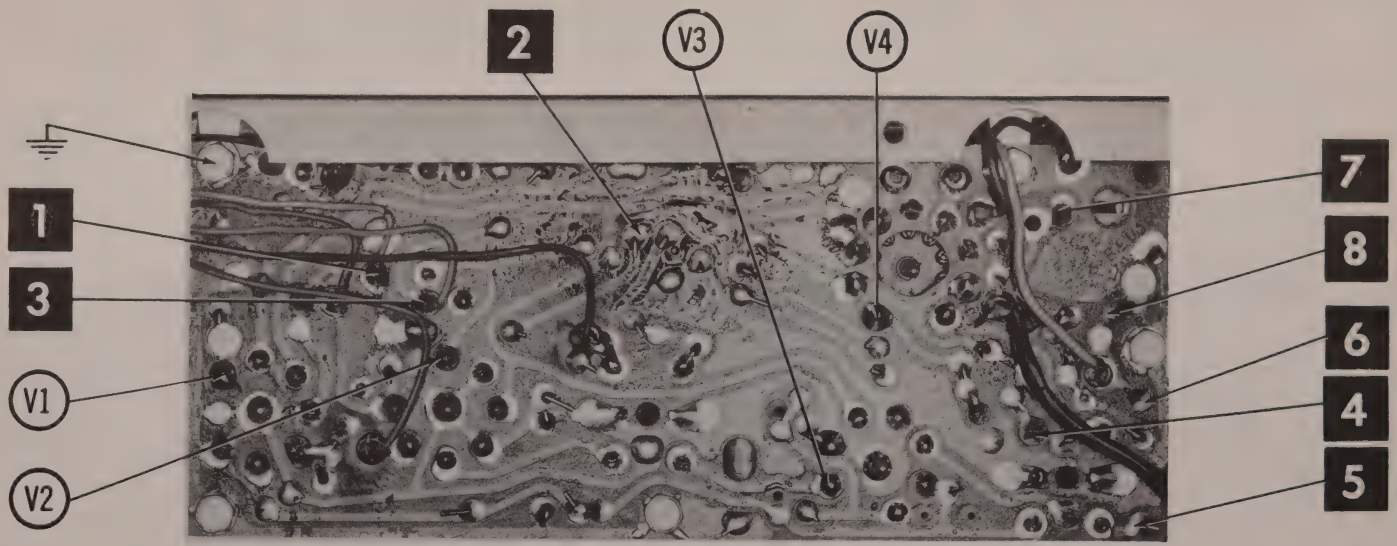
CHEVROLET MODEL 988275
CORVAIR MODEL 988062



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ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆

ITEM No.	USE	TYPE
V1	RF Amplifier	12DZ6
V2	Converter	12AD6
V3	IF Amplifier	12EK6
V4	Det. -AVC-AF Amp.	12DS7

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	DS-503	Output	2N235A				PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	DELCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	■850	16	7273730	AFH3-54-30		WP300.6		TVLS-3021 *	
B	▲400	16							
C	2.2	11.5							

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2		#7275120 ①						
C3	.047 75V		P288N-047	DD-503	CUB2S47	1DP-2-473	GEM-4147	2TM-S47
C4A	68 N750 10%		N750-DI 68	DTN-68	C10Q68U	CCTN-680	CN7-468	10TCU-Q68
B	39 N750 10%			TCN-39	C10Q39U	CCTN-390	CN7-439	10TCU-Q39
C5	.1 75V		P288N-1	DF-104	CUB2P1	1DP-2-104	GEM-201	2TM-P1
C6A		#7273697						
B								
C7	33		DI-33	DD-330	L10Q33	CCD-330	GP433	10TS-Q33
C8	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C9	560		DI-560	DD-561	L10T56	CCD-561	B-356	10TS-T56
C10A	220		DI-220	DD-221	L10T22	CCD-221	B-322	10TS-T22
B	220		DI-220	DD-221	L10T22	CCD-221	B-322	10TS-T22
C11	.47 100V		P288N-47		CUB2P47	2DP-5-474	GEM-2047	2TM-P47

Delco Part Number.
① Model 988275 uses Part #7273317.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	DELCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	5meg	½	7274920 ①					Tone
B	5meg							Volume
C	Switch							Power Off-On
R1A	5meg	½	1221260 ②	CD-59-A		† QJ-1103A	■ UE3990-S	Tone
B	5meg							Volume
C	Switch							Power Off-On
R2	300Ω	2(WW)	7275474					Bias
	135Ω Stop							

† "Concentrikit" equivalent: K-8 Kit with base elements and shafts: B13-141, P13-104 (Panel)
B13-141, R1-113 (Rear)
S12 (Bushing)
76-2 (Switch)

■ "STA-LOC" equivalent: FH56A, RU56A, OS1125, IS1562, US42
① Model 988062. ② Model 988275.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R3	2.2meg	
R4	10K	
R5	47K	
R6	680K	
R7	39meg	

ITEM No.	RATING	REMARKS
R8	3.3meg	
R9	100Ω	
R10	4.7meg	
R11	680K	
R12	18Ω	

ITEM No.	RATING	REMARKS
R13	470K	
R14	56Ω	
R15	10Ω	
R16	.33Ω	Note 1
R17	150Ω 1W	Note 2

Note 1. Fuse Type (Part #7274329).
Note 2. Not used in some versions.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		DELCO PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	RF Choke	7255738	19-1004	19-1004	BC-565	4610		6.5uh
L2	Ant. Coil	1221138						
L3	RF Coil	1221138						
L4	RF Choke	7269684	19-1041	19-1041	BC-514	4664		1.8MH
L5	Osc. Coil	1221263						
L6	Input IF Trans.	1221257	16-6756	16-6756	BC-344	13-PH1		
L7	Output IF Trans.	1221255			BC-424			
L8	"A" Lead Hash Choke	1217846						1.4uh

PARTS LIST AND DESCRIPTIONS (Continued)

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ~)	DELCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L9	.740A	.7Ω	.011 HY	7274342				TC-2		

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	DELCO PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	5.6	1	7275145 ①			TA-48			① Model 988062
	4.4	1	1221425 ②			TA-48			② Model 988275

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE	REPLACEMENT DATA							NOTES
	PRI.	DELCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	15Ω Tap ⓐ 3-4Ω	1221431				TA-50			

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	DELCO PART No.	QUAM PART No.	
SP1	6"x 9"	PM	3-4Ω	7275558 ①	69A2Z4	① Model 988062
	6"x 9"	PM	3-4Ω	7276056 ②	69A2	② Model 988275. Alternate Part #7276057, 7272731

MISCELLANEOUS

ITEM No.	PART NAME	DELCO PART No.	NOTES
M1	Tuner	1220885	Manual
M2A	Spark Plate		"A" Lead Section
B	Spark Plate		"Dial Lite" Section

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

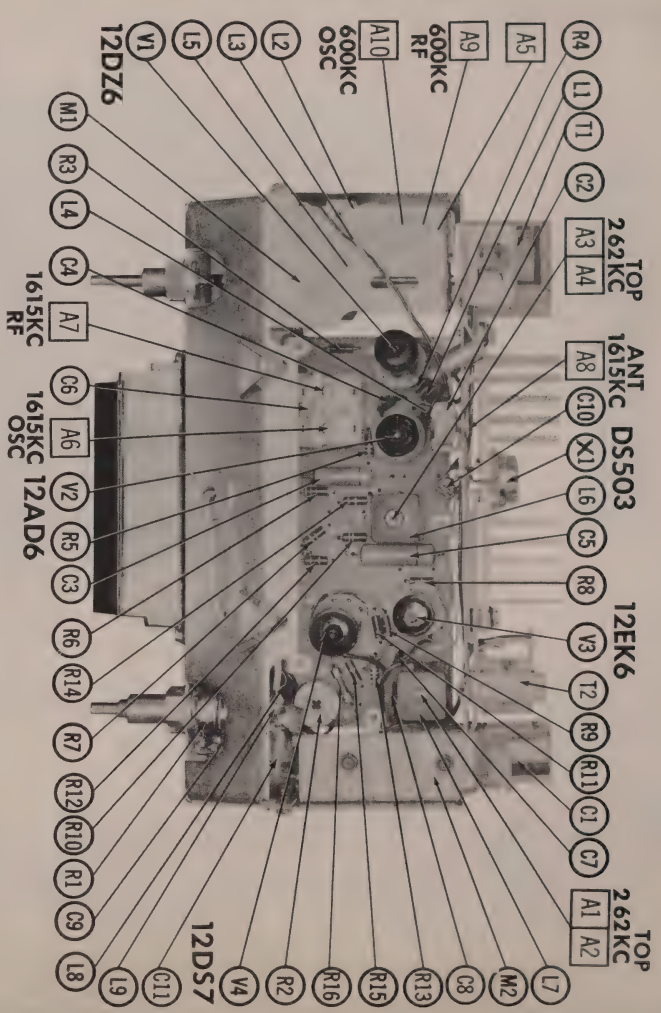
NAME	PART NO.	DESCRIPTION
Knob	1990894	Tuning, Volume
Knob	7272970	Tone
Knob	7274782	Dummy, Model 988062
Knob	7272969	Dummy, Model 988275
Pointer Assembly	7272125	
Escutcheon	7274983	Includes Dial, Dial Background, Model 988062
Escutcheon	7273310	Includes Dial, Dial Background, Model 988275

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Bonding Strap	Use BELDEN No. 8661

CHASSIS—TOP VIEW

CHEVROLET MODEL 988275



PHOTOFACT® Folder with CIRCUITRACE®

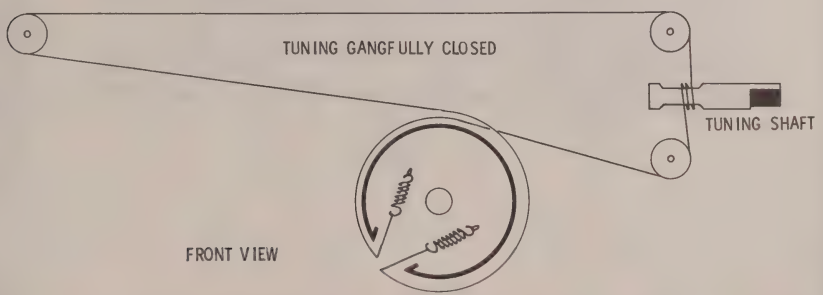
**CROWN MODEL
TR-875**

CROWN MODEL
TR-875

CROWN MODEL
TR-875

TRADE NAME	Crown Model TR-875		
IMPORTER	Shriro, Inc., 276 Fourth Ave., New York 10, N. Y.		
TYPE SET	Battery Operated Transistorized Portable BC-SW Receiver		
POWER SUPPLY	9 Volts DC	RATING	8MA@9 Volts DC (No Signal, Min. Volume) 15MA@9 Volts DC (Signal, Normal Volume)
TUNING RANGE—BROADCAST	535 - 1605 KC	SHORT WAVE	3.9 - 12MC

DIAL CORD STRINGING



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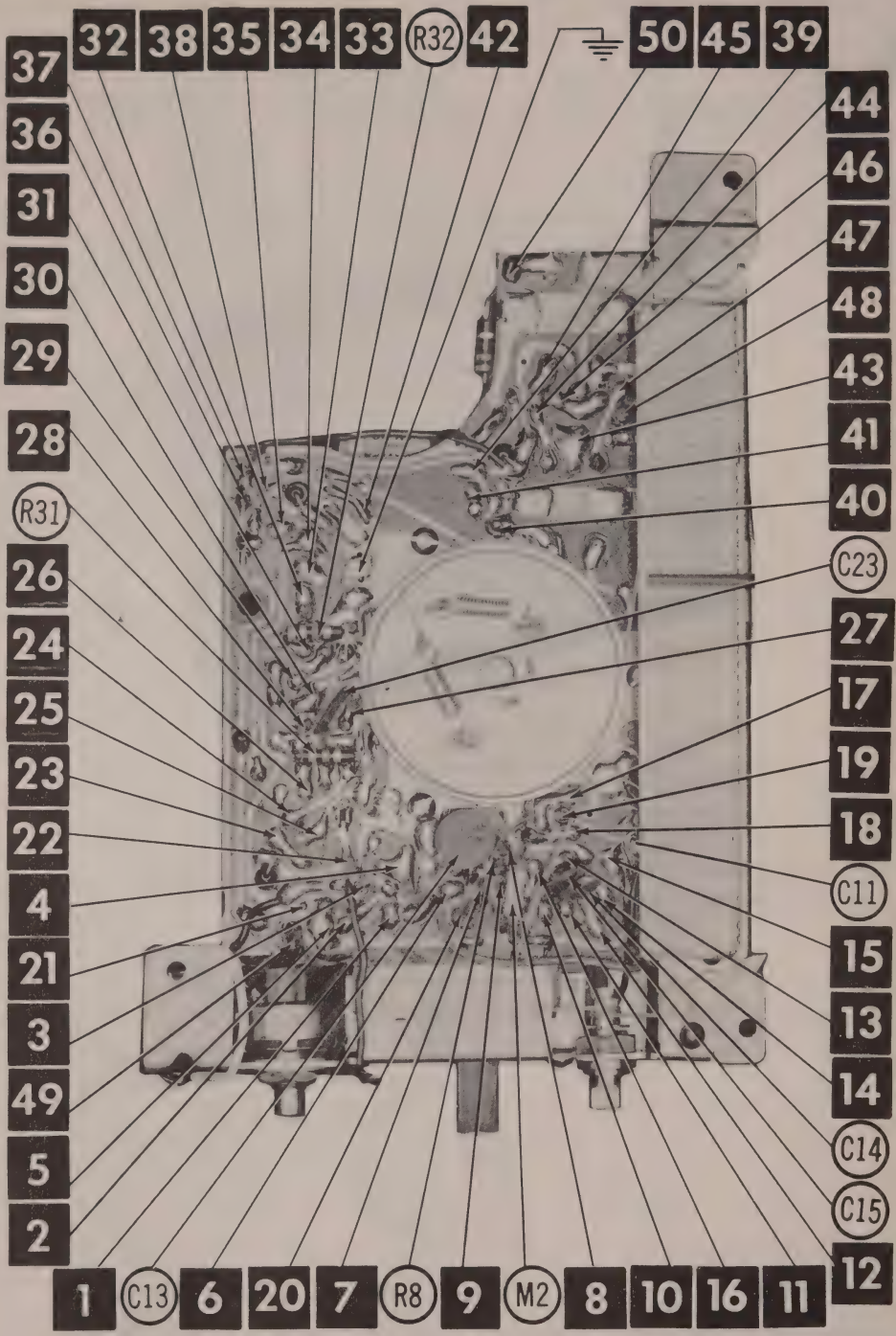
JF889

SET497 FOLDER 7



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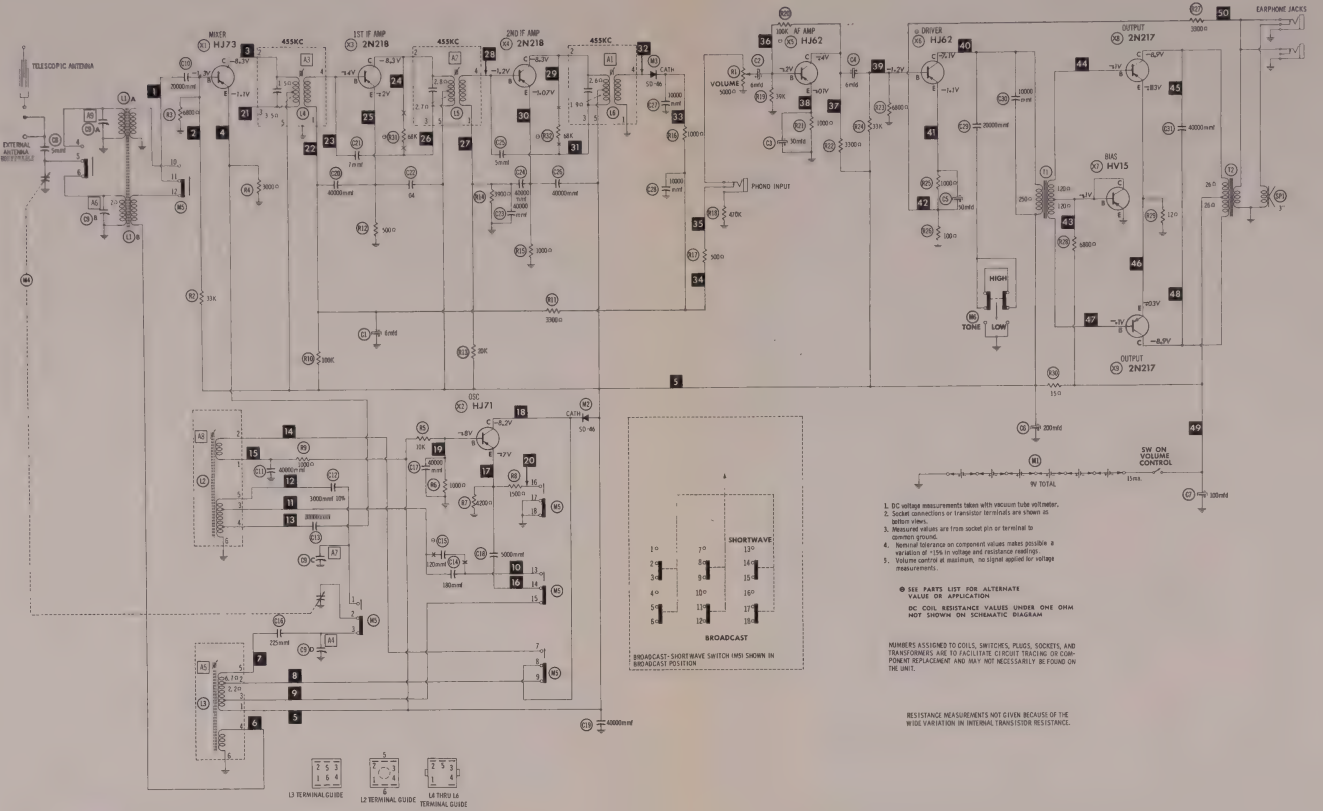

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

⊕ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
with CIRCUITRACE
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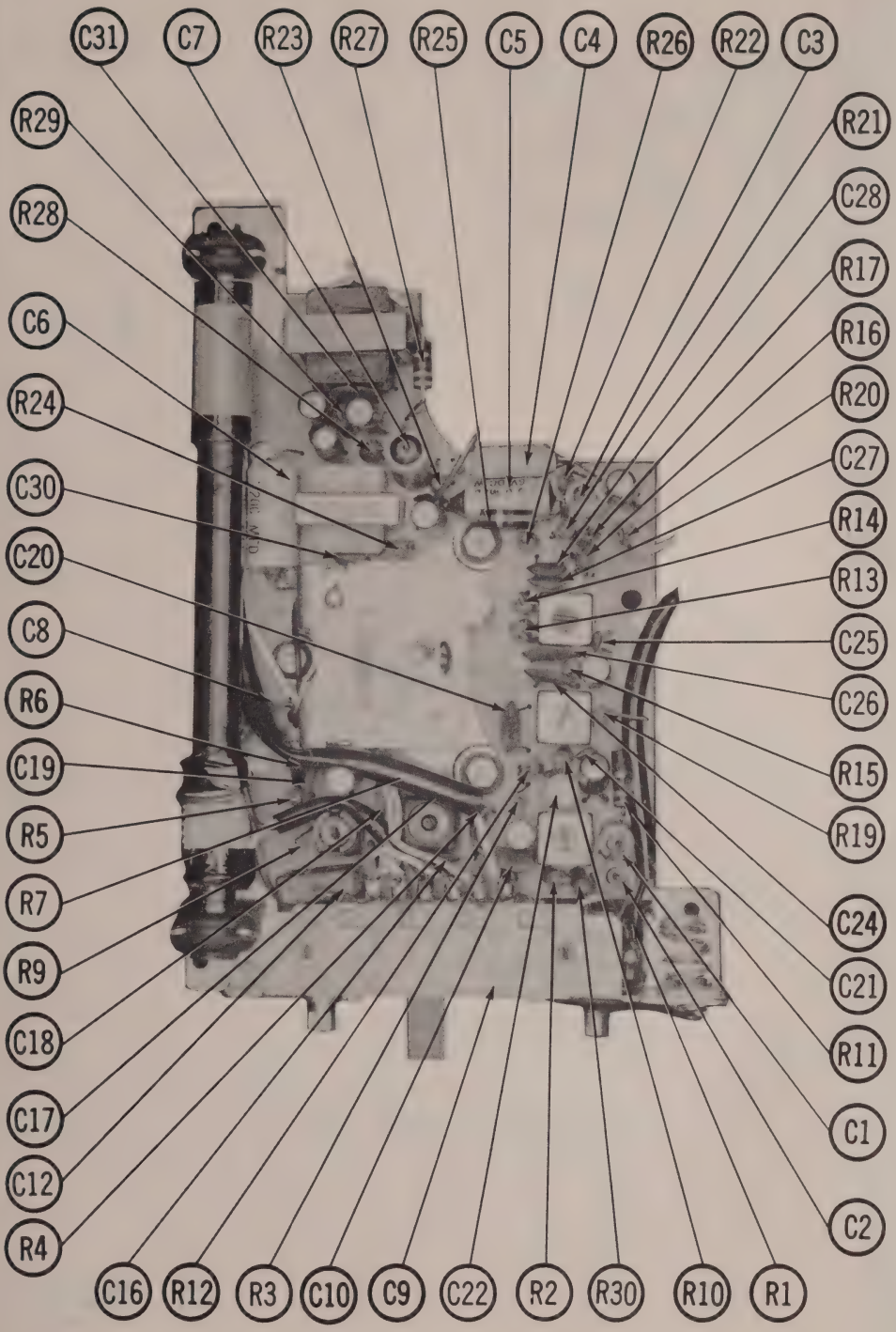
CROWN MODEL TR-875



CHASSIS TOP VIEW—CAPACITOR, RESISTOR & MISC. IDENT.

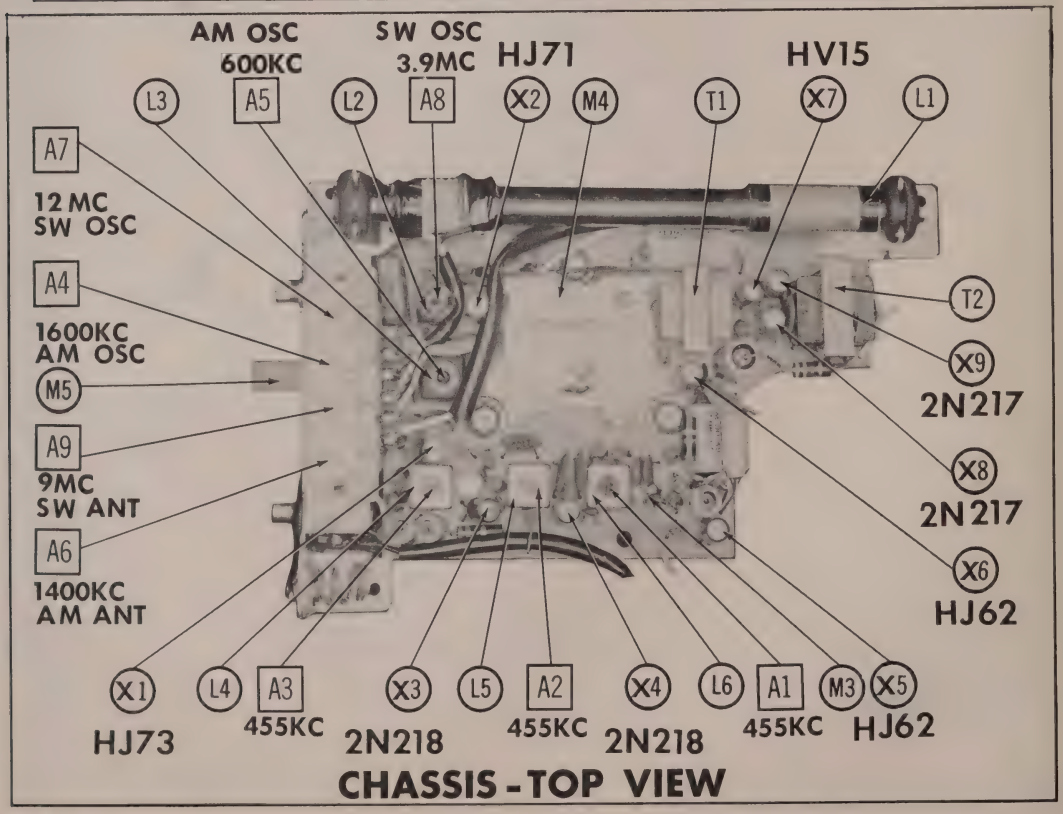
ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools: A1, A2, A3.....GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291
WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538
A4, A6, A7, A9....GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Loop	455KC (400∿ Mod.)	(BC) Tuning gang fully open.	Across voice coil.	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.	"	1600KC	(BC) 1600KC	"	A4	"
3.	"	600KC	(BC) 600KC	"	A5	"
4.	"	1400KC	(BC) Tune to 1400KC signal.	"	A6	Adjust for maximum output while rocking tuning gang.
5.	"	12MC	(SW) 12MC	"	A7	Adjust for maximum output.
6.	"	3.9MC	(SW) 3.9MC	"	A8	"
7.	"	9MC	(SW) Tune to 9MC signal.	"	A9	Adjust for maximum output while rocking tuning gang.



CHASSIS - TOP VIEW

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	HJ-73	Mixer			2N486		PNP
X2	HJ-71	Oscillator			2N485		PNP
X3	2N218	1st IF Amplifier		2N218	2N483	2N218	PNP
X4	2N218	2nd IF Amplifier		2N218	2N483	2N218	PNP
X5	HJ-62 *	AF Amplifier		2N407	2N362	2N104	PNP
X6	HJ-62 *	Driver		2N407	2N362	2N104	PNP
X7	HV-15	Bias		1N2326	1N295		PNP
X8	2N217	Output		2N217	2N633	2N217	PNP
X9	2N217	Output		2N217	2N633	2N217	PNP

* Alternate Type 2N215.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	CROWN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	6	6		XPP-6006	NLW6-25	TT10X6	ML6-6	TE-1085	
C2	6	6		XPP-6006	NLW6-25	TT10X6	ML6-6	TE-1085	
C3	30	6		XPP-6030	NLW30-6	TT6X30	ML30-6	TE-1092	
C4	6	6		XPP-6006	NLW6-25	TT10X6	ML6-6	TE-1085	
C5	50	6		XPP-6050	NLW50-6	TT6X50	ML50-6	TE-1100	
C6	200	10		BC D10190				TE-1119.6	
C7	100	10		PWE10100	NLW100-10		ML100-15	TE-1119.3	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C8	5	Note 1	DI-5	DD-050	L10V5	CCD-050	GP550	10TS-V50
C9A								
B								
C								
D								
C10	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C11	40000			DD-403	BYB6S4		GP140	5HK-S40
C12	3000 500V 10%		1464-003		1R5D3	CM-20B-302K	MCB461	MS-23
C13	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C14	180		DI-180	DD-181	L10T18	CCD-181	GP318	10TS-T18
C15	120		DI-120	DD-121	L10T12	CCD-121	GP312	10TS-T12
C16	225		DI-220	DD-221	L10T22	CCD-221	B-322	10TS-T22
C17	40000			DD-403	BYB6S4		GP140	5HK-S40
C18	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C19	40000			DD-403	BYB6S4		GP140	5HK-S40
C20	40000			DD-403	BYB6S4		GP140	5HK-S40
C21	7		NPO-DI 6.8	DTZ-6R8	C10V7C	CCTO-6R8	CNO-568	10TCC-V68
C22	.04 50V		V84C2S47	DD-403	BYB6S4		GP140	5HK-S40
C23	40000			DD-403	BYB6S4		GP140	5HK-S40
C24	40000			DD-403	BYB6S4		GP140	5HK-S40
C25	5		NPO-DI 5.0	DTZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50
C26	40000			DD-403	BYB6S4		GP140	5HK-S40
C27	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C28	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C29	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C30	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C31	40000			DD-403	BYB6S4		GP140	5HK-S40

Note 1. Not used in some versions.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	CROWN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	5000Ω	½						Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	33K	
R3	6800Ω	
R4	3000Ω	
R5	10K	
R6	1000Ω	
R7	4200Ω	
R8	1500Ω	
R9	1000Ω	
R10	100K	
R11	3300Ω	
R12	500Ω	

ITEM No.	RATING	REMARKS
R13	20K	
R14	3900Ω	
R15	1000Ω	
R16	1000Ω	
R17	500Ω	
R18	470K	
R19	39K	
R20	100K	
R21	1000Ω	
R22	3300Ω	
R23	6800Ω	

ITEM No.	RATING	REMARKS
R24	33K	
R25	1000Ω	
R26	100Ω	
R27	3300Ω	
R28	6800Ω	
R29	12Ω	
R30	15Ω	
R31	68K	Note 1
R32	68K	Note 1

Note 1. Not used in some versions.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		CROWN PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1A	SW Loopstick							
B	BC Loopstick							
L2	SW Osc. Coil	S-214						
L3	BC Osc. Coil	8025						
L4	1st IF Trans.	8508						
L5	2nd IF Trans.	8503						
L6	3rd IF Trans.	8518						

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	CROWN PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1, 3	1	TRT-20						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	CROWN PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	700Ω CT	6-8Ω	TRT-21							

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	CROWN PART No.	QUAM PART No.	
SP1	3"	PM	6-8Ω			

BATTERIES

ITEM No.	VOLTAGE	CROWN PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1½V			930 *		1015 *		M-15R*	* 6 Required

PARTS LIST AND DESCRIPTIONS (Continued)

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		CROWN PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	SD-46		1N60	1N60	1N60	AVC (Pigtail)
M3	SD-46		1N60	1N60	1N60	Det. (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	CROWN PART No.	NOTES
M4	Tuning Cap		2 Gang
M5	Switch		Function (2 Position Slide Type)
M6	Switch		Tone (DPDT Slide Type)

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

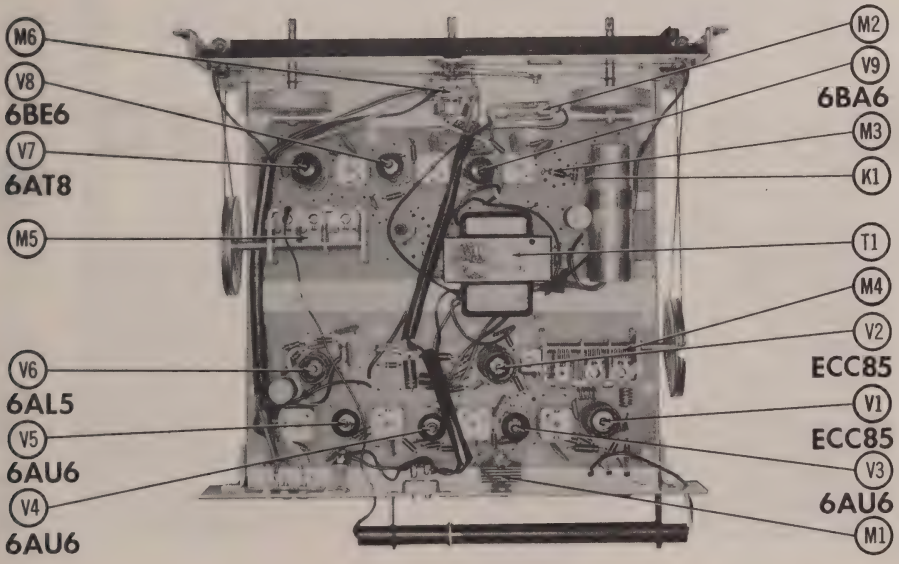
PHOTOFACT® Folder with CIRCUITRACE®

HARMAN-KARDON MODEL T-230

HARMAN-KARDON
MODEL T-230

TRADE NAME	Harman-Kardon Model T-230 (The Sonnet)		
MANUFACTURER	Harman-Kardon, Inc., 520 Main Street, Westbury, L. I., N. Y.		
TYPE SET	AC Operated 9 Tube FM-AM Tuner		
POWER SUPPLY	105 - 125 Volts AC, 60 Cycles	RATING	37 Watts, .38 Amp. @117 Volts AC
TUNING RANGE — BROADCAST	530 - 1640KC	FREQ. MOD.	88 — 108MC

HARMAN-KARDON
MODEL T-230



HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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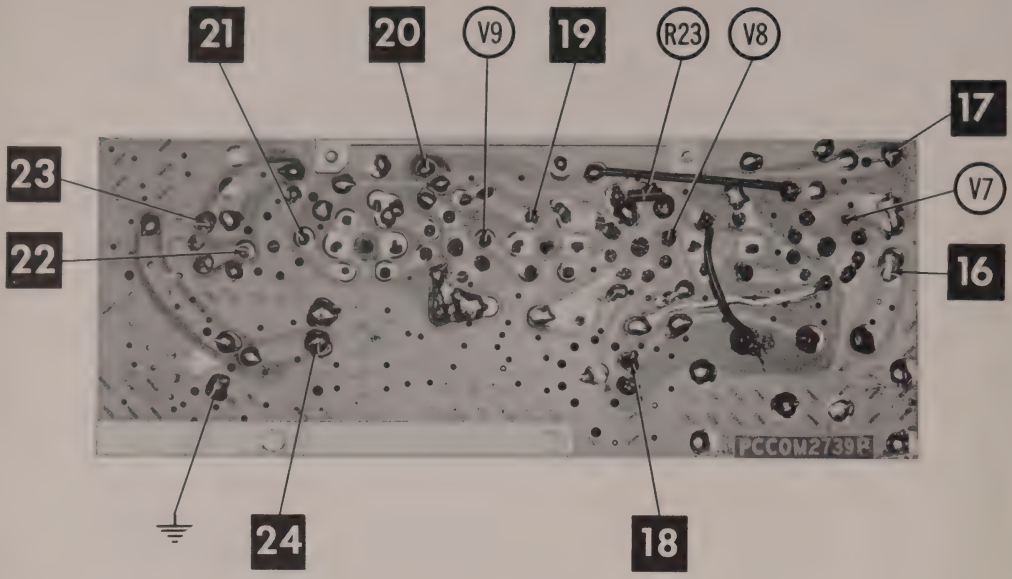
KL022

SET 497 FOLDER 8



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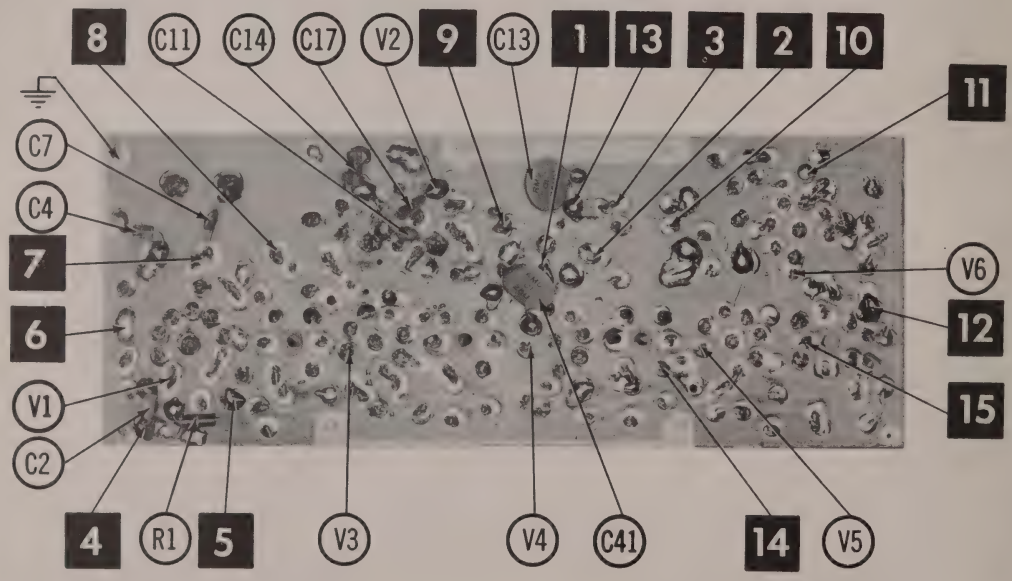
AM PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



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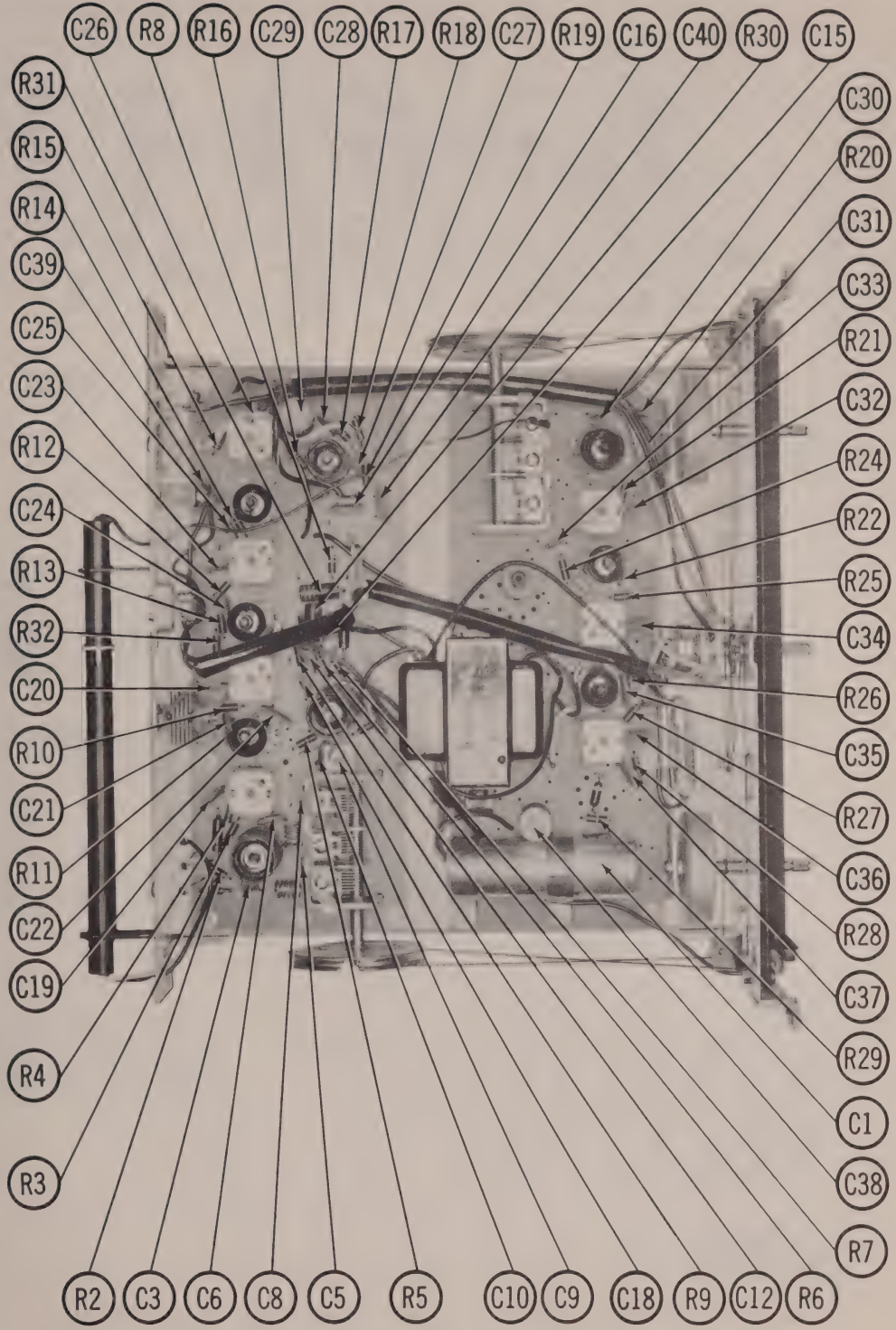
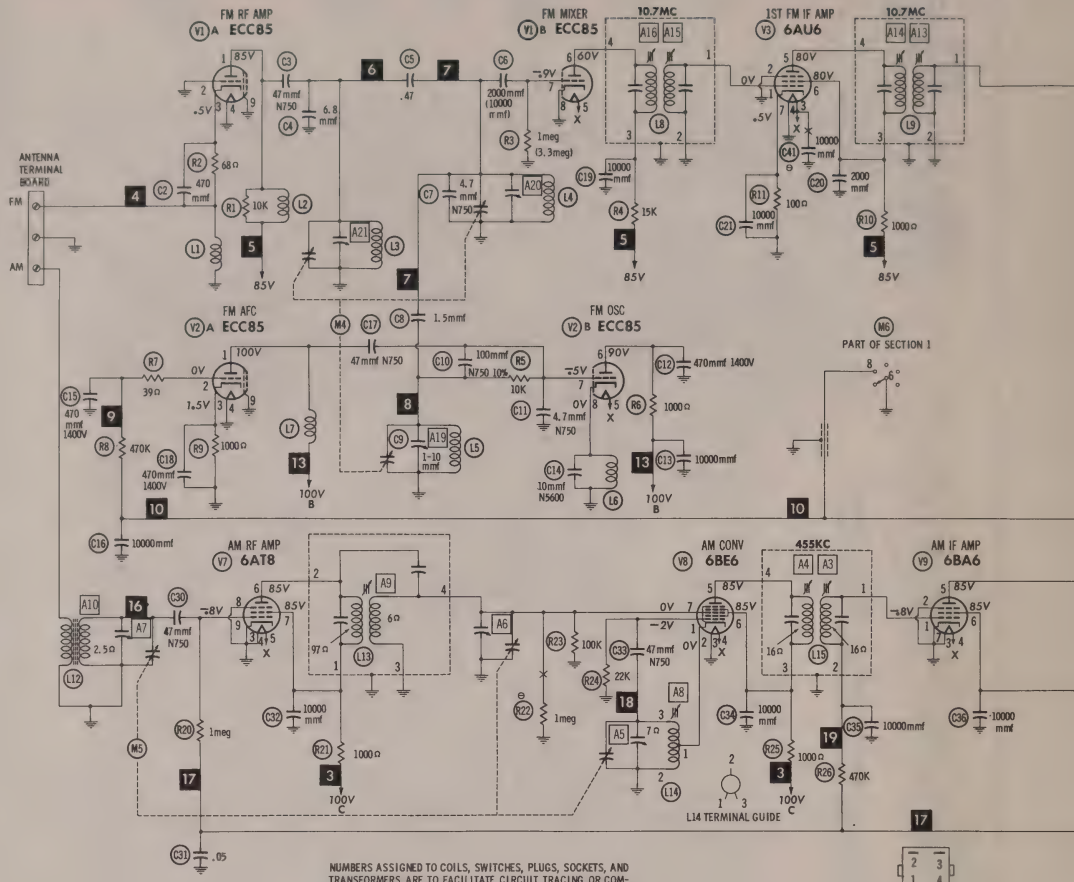
FM PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



CHASSIS TOP VIEW–CAPACITOR AND RESISTOR IDENTIFICATION



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC85 6AQ8	†1600Ω	0Ω	68Ω	0Ω	.1Ω	†17K	1meg	0Ω	0Ω
V2	ECC85 6AQ8	†660Ω	0Ω	1000Ω	0Ω	.1Ω	†1600Ω	10K	.1Ω	0Ω
V3	6AU6	.1Ω	0Ω	.1Ω	0Ω	†2600Ω	†2600Ω	100Ω		
V4	6AU6	.5Ω	0Ω	.1Ω	0Ω	†1600Ω	†1600Ω	100Ω		
V5	6AU8	100K	0Ω	.1Ω	0Ω	†7400Ω	†7400Ω	0Ω		
V6	6AL5	0Ω	180K	.1Ω	0Ω	360K	0Ω	180K		
V7	6AT8	NC	NC	0Ω	0Ω	.1Ω	†1600Ω	†1600Ω	0Ω	4.8meg
V8	6BE6	22K	.5Ω	0Ω	.1Ω	†1600Ω	†1600Ω	6Ω		
V9	6BA6	4meg	0Ω	0Ω	.1Ω	†1600Ω	†1600Ω	0Ω		

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE INDICATED.
† MEASURED FROM OUTPUT OF M1 NC NO CONNECTION.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
with CIRCUITRACT

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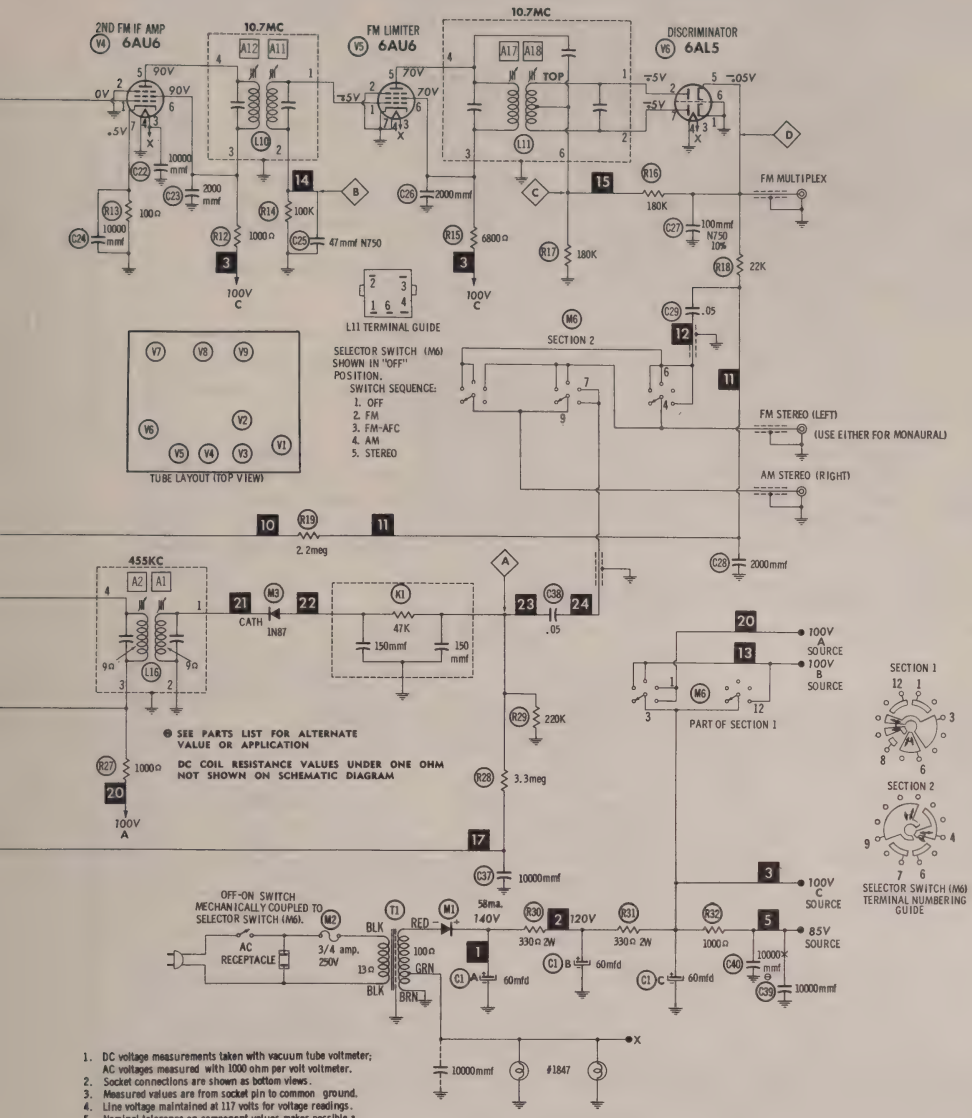


1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. No signal applied for voltage measurements.

HARMAN-KARDON
MODEL T-230

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use only enough generator output to provide a usable indication.

Suggested alignment tools:
A1 thru A4, A9, A11 thru A18..... GENERAL CEMENT #5097, 8727
WALSCO #2515
A5, A6, A7, A19, A20, A21..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520
A8..... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545

AM ALIGNMENT—SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (400∿ Mod.)	(AM) Tuning gang fully open.	DC probe to point (A). Common to chassis.	A1, A2, A3, A4	Adjust for maximum deflection.
2.	High side thru .001mfd to AM antenna terminal. Low side to chassis.	1400KC	1400KC	"	A5, A6, A7	"
3.	"	600KC	600KC	"	A8, A9, A10	Adjust for maximum deflection Repeat Step 2.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM—SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	High side thru .001mfd to pin 7 (grid) of FM Mixer. Low side to chassis.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe to point (B). Common to chassis.	A11, A12, A13, A14, A15, A16	Adjust for maximum deflection.
5.	"	"	"	DC probe thru 1meg to point (C). Common to chassis.	A17	"
6.	"	"	"	DC probe to point (D). Common to chassis.	A18	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE—SELECTOR IN FM POSITION

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	High side thru .001mfd to pin 7 (grid) of FM Mixer. Low side to chassis.	10.7MC (450KC Swp)	(FM) Point of non-interference.	Vert. amp to point (B). Low side to chassis.	A11, A12, A13, A14, A15, A16	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
5.	"	"	"	Vert. amp thru 27K to point (C). Low side to chassis.	A17	"
6.	"	"	"	Vert. amp to point (D). Low side to chassis.	A18	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A17 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT—SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	Across FM Antenna terminals.	106MC (Unmod.)	(FM) 106MC	DC probe to point (B). Common to chassis.	A19, A20, A21	Adjust for maximum deflection.
8.	"	90MC	90MC	"	L5, L4, L3	Adjust for maximum deflection by expanding or compressing coil turns.

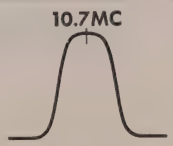


FIG. 1

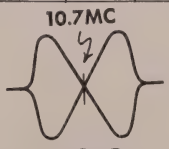


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	FM RF Amp. -FM Mixer	ECC85/6AQ8	V6	Discriminator	6AL5
V2	FM Osc. -FM AFC	ECC85/6AQ8	V7	AM RF Amplifier	6AT8
V3	1st FM IF Amplifier	6AU6	V8	AM Converter	6BE6
V4	2nd FM IF Amplifier	6AU6	V9	AM IF Amplifier	6BA6
V5	FM Limiter	6AU6			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	Harman-Kardon PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	60	200	JE2352713	PR3-020	BBRT0235	WT458		TVAS-3470 *	
B	60	200			BR6025				
C	60	200							

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

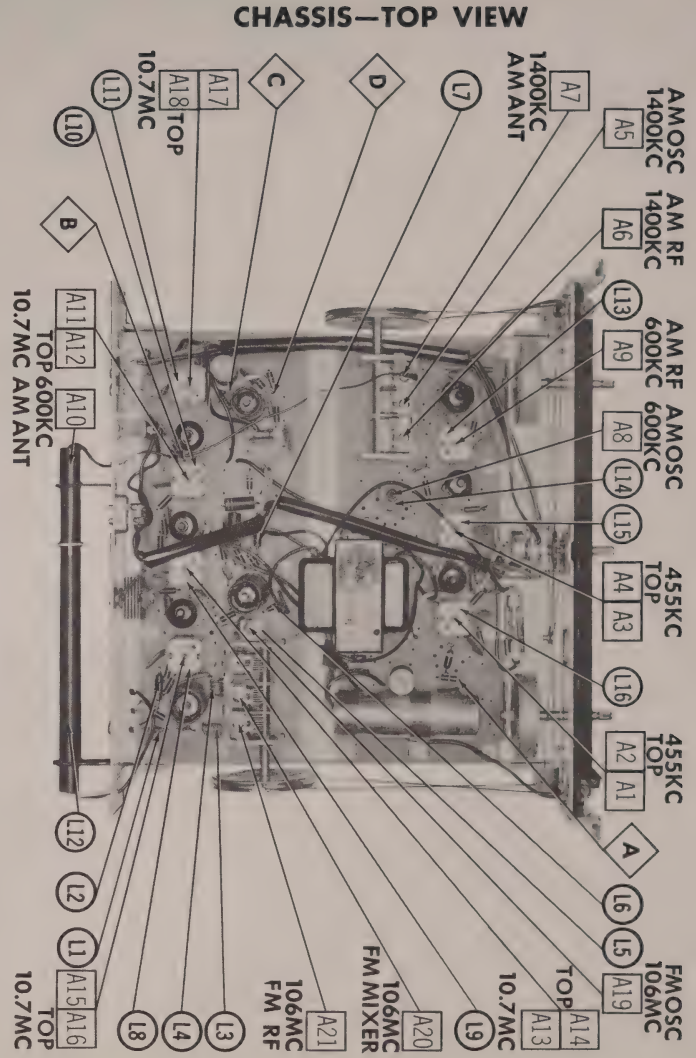
FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C3	47 N750		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CNO-447	10TCU-Q47
C4	6.8		NPO-SI 6.8	TCZ-6.8	C10V68C	CCTO-6R8	CNO-568	10TCC-V68
C5	.47		NPO-SI .5	TCZ-R47				
C6	2000	(10000) †	BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C7	4.7 N750			DTN-5	C10V5U	CCTN-050	CN7-547	10TCU-V50
C8	1.5		NPO-SI 1.5	TCZ-1R5	C10V15C		CNO-515	10TCC-V15
C9	1-10			829-10				
C10	100 N750 10%		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C11	4.7 N750			DTN-5	C10V5U	CCTN-4R7	CN7-547	10TCU-V50
C12	470 1400V		HVD-15-470	DD30-471	HVB20T47	3CCD-471	2DY-347	30GA-T47
C13	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C14	10 N5600					*		
C15	470 1400V		HVD-15-470	DD30-471	HVB20T47	3CCD-471	2DY-347	30GA-T47
C16	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C17	47 N750		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C18	470 1400V		HVD-15-470	DD30-471	HVB20T47	3CCD-471	2DY-347	30GA-T47
C19	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C20	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C21	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C22	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C23	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C24	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C25	47 N750		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C26	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C27	100 N750 10%		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C28	2000		BPD-002	DD-102	BYA10D2	CCD-202	B-220	5HK-D20
C29	.05 200V		P215IN-047	DD-503	BC2S47J	4DP-3-503	ACE-615	2SE-S47
C30	47 N750		N750-DI 47	DTN-47	C10Q47U	CCTN-47	CN7-447	10TCU-Q47
C31	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5
C32	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C33	47 N750		N750-DI 47	DTN-47	C10Q47U	CCTN-47	CN7-447	10TCU-Q47
C34	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C35	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C36	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C37	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C38	.05 200V		P215IN-047	DD-503	BC2S47J	4DP-3-503	ACE-615	2SE-S47
C39	10000	Note 1	BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C40	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C41	10000	Note 1	BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10

Note 1. Not used in some versions.
† Alternate Value.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CHASSIS—TOP VIEW



HARMAN-KARDON
MODEL T-230

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R1	10K	
R2	68Ω	
R3	1meg	(3.3meg) *
R4	15K	
R5	10K	
R6	1000Ω	
R7	39Ω	
R8	470K	
R9	1000Ω	
R10	1000Ω	
R11	100Ω	

ITEM No.	RATING	REMARKS
R12	1000Ω	
R13	100Ω	
R14	100K	
R15	6800Ω	
R16	180K	
R17	180K	
R18	22K	
R19	2.2meg	
R20	1meg	
R21	1000Ω	
R22	1meg	Note 1

ITEM No.	RATING	REMARKS
R23	100K	
R24	22K	
R25	1000Ω	
R26	470K	
R27	1000Ω	
R28	3.3meg	
R29	220K	
R30	330Ω 2W	
R31	330Ω 2W	
R32	1000Ω	

* Alternate Value.
Note 1. Not used in some versions.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	Harman-Kardon PART No.	REPLACEMENT DATA	
K1	AM Det. RF Filter	150mmf, 150mmf, 47K	PC781599	Aerovox Centralab Cornell-Dubilier Sprague	PA-98 PC-51 111TM2 D-2

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		Harman-Kardon PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	FM Ant. Coil		19-2003	19-2003		4584		.24uh
L2	RF Coil		19-1003	19-1003	BC-564	4608		3.3uh
L3	FM RF Coil							
L4	FM Mixer Coil							
L5	FM Osc. Coil							
L6	Cathode Choke		19-1000	19-1000	BC-561	4602		1uh
L7	RF Choke		19-1003	19-1003	BC-564	4608		3.3uh
L8	1st FM IF Trans.	GT2092595	16-3490	16-3490		1463-PC		
L9	2nd FM IF Trans.	GT2092596	16-3490	16-3490		1463-PC		
L10	3rd FM IF Trans.	GT2092597	16-3490	16-3490		1463-PC		
L11	Discriminator	GT2092598						
L12	Loopstick	GL2353517	14-7002	14-7002	BC-418	705-A		
L13	AM RF Trans.	GTCOM2751						
L14	AM Osc. Coil	GLCOM2738						
L15	1st AM IF Trans.	GTCOM2752	16-6780	16-6780	BC-356	13-PC1	RF-4	
L16	2nd AM IF Trans.	GTCOM2753	16-6780	16-6780	BC-357	13-PC2	RF-4	

TRANSFORMER (POWER)

ITEM No.	RATING		REPLACEMENT DATA						
	PRI.	SEC. 1	Harman - Kardon PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V@ .38A	120V@.055A Tap 6.3V@3.1A	FT2352712						

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	Harman-Kardon PART No.	INTERNATIONAL PART No.	ITT PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.058A	Z1122134 *	T075 *	1234AH *	75 *	SR200 ♦	* Selenium Type ♦ Silicon Type

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			Harman-Kardon PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	3AG	3/4A 250V			312.750 (3AG 3/4A 250V)	357001	AGC 3/4	4405

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		Harman-Kardon PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M3	1N87	GC2923361	1N60	1N60	1N60	AM Det. (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	Harman-Kardon PART No.	NOTES
M4	Tuning Cap.	JV2092541	FM, 3 Gang
M5	Tuning Cap.	JV2352725	AM, 3 Gang
M6	Switch	ER2353488	Function

CABINETS & CABINET PARTS

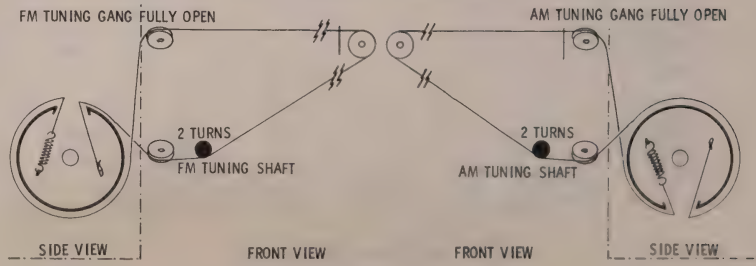
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob Dial Glass	PCOM3468 P2353518	Tuning Function

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type) ..... Use BELDEN No. 8774

DIAL CORD STRINGING



PHOTOFACT® Folder

HARMONY MODELS SA-30B, SA-30W

HARMONY MODELS
SA-30B, SA-30W

MODEL SA-30W

HARMONY MODELS
SA-30B, SA-30W

TRADE NAME	Harmony Models SA-30B, SA-30W
MANUFACTURER	Continental Mfg. Inc., 1612 California Street, Omaha, Nebraska
TYPE SET	AC Operated 8 Tube Stereo Amplifier
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 115 Watts, 1.17 Amp. @117 Volts AC

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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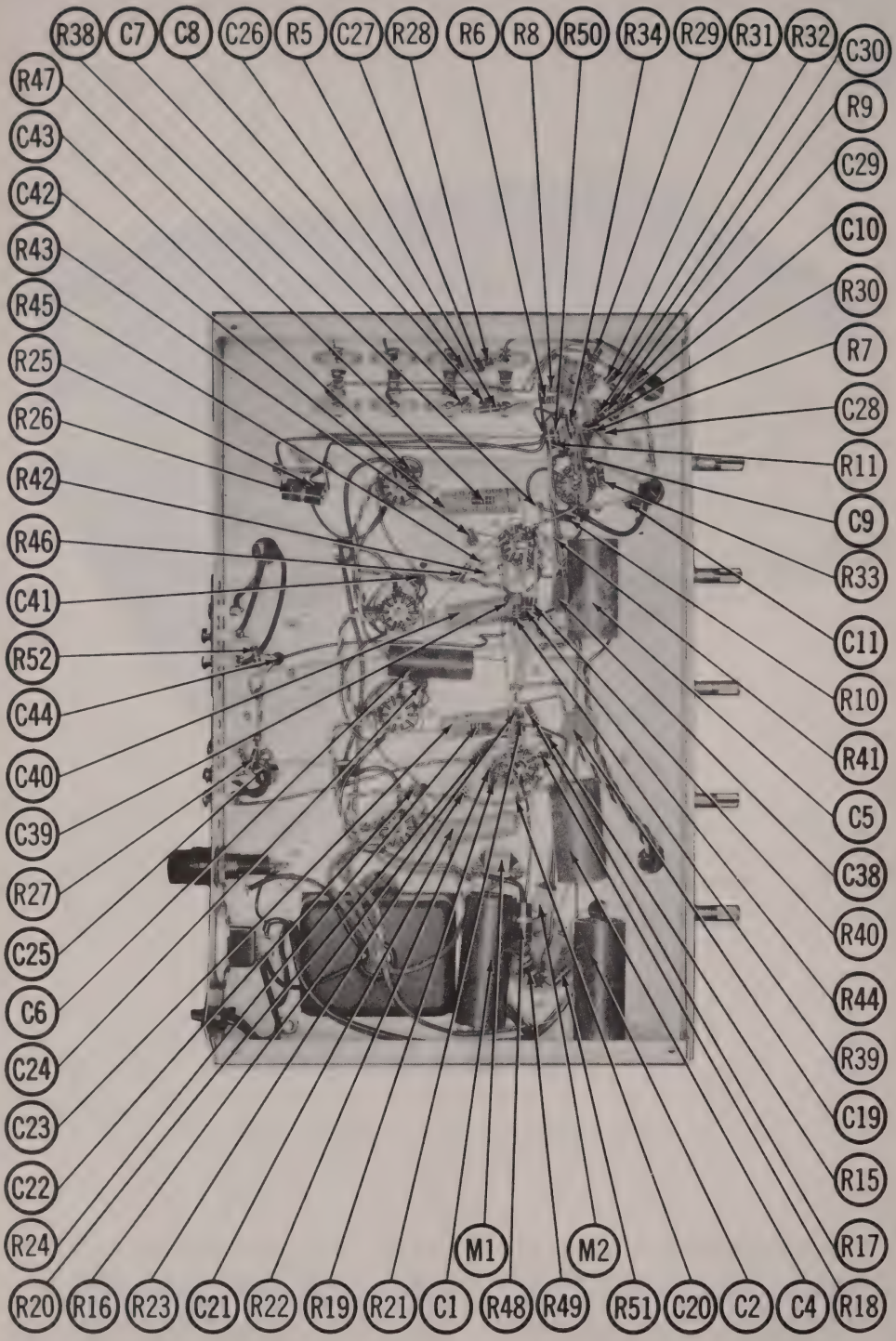
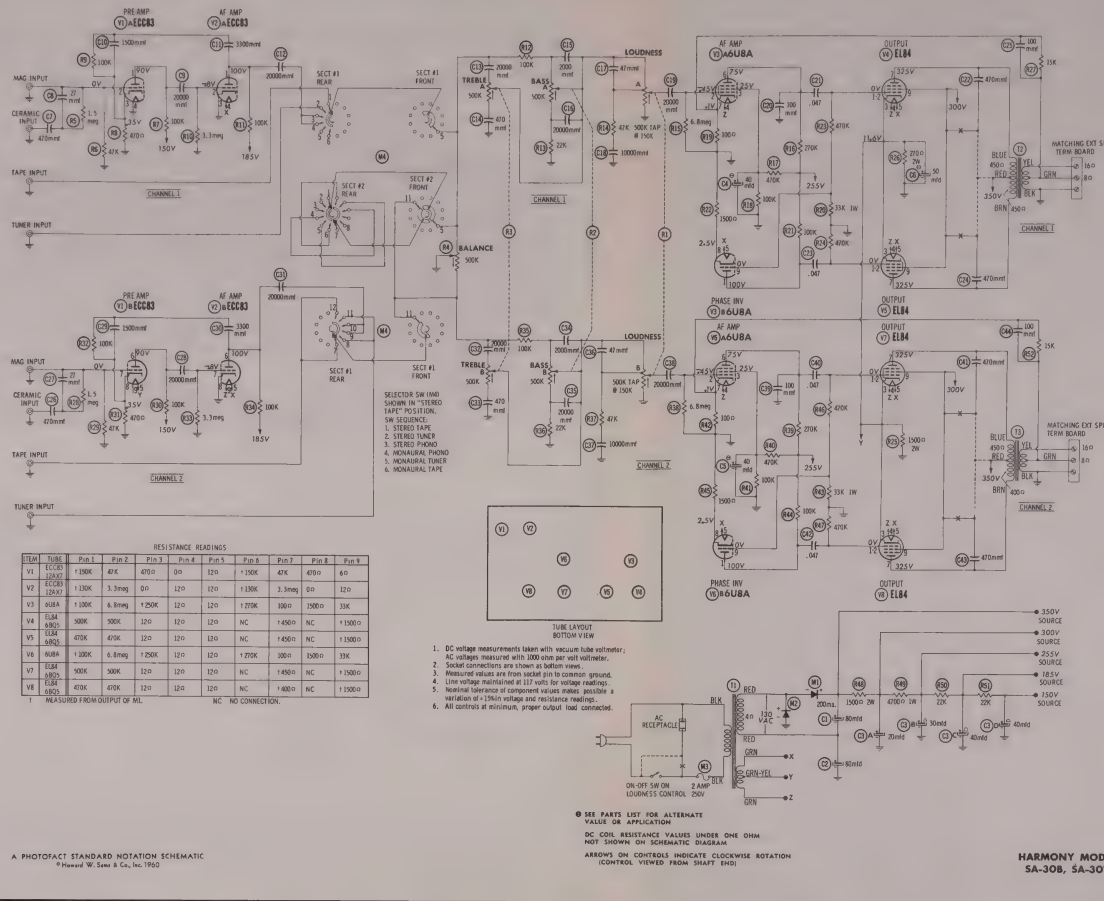
JV882

SET 497 FOLDER 9



CHASSIS BOTTOM VIEW



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC83 12AX7	1 100K	47K	470Ω	0Ω	12Ω	1 100K	47K	470Ω	6Ω
V2	ECC83 12AX7	1 130K	3. 3meg	0Ω	12Ω	12Ω	1 130K	3. 3meg	0Ω	12Ω
V3	6U8A	1 100K	6. 8meg	1 250K	12Ω	12Ω	1 270K	100Ω	1500Ω	33K
V4	EL84 6BQ5	500K	500K	12Ω	12Ω	12Ω	NC	1 450Ω	NC	1 1500Ω
V5	EL84 6BQ5	470K	470K	12Ω	12Ω	12Ω	NC	1 450Ω	NC	1 1500Ω
V6	6U8A	1 100K	6. 8meg	1 250K	12Ω	12Ω	1 270K	100Ω	1500Ω	33K
V7	EL84 6BQ5	500K	500K	12Ω	12Ω	12Ω	NC	1 450Ω	NC	1 1500Ω
V8	EL84 6BQ5	470K	470K	12Ω	12Ω	12Ω	NC	1 400Ω	NC	1 1500Ω

1 MEASURED FROM OUTPUT OF ML. NC NO CONNECTION.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±10% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

❶ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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HARMONY MODELS SA-30B, SA-30W

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (CBS • GENERAL ELECTRIC • RAYTHEON • SYLVANIA)
V1	Channel 1 Preamp. - Channel 2 Preamp.	ECC83/12AX7
V2	Channel 1 AF Amp. - Channel 2 AF Amp.	ECC83/12AX7
V3	Channel 1 AF Amp. - Phase Inverter.	6U8A
V4	Channel 1 Output	EL84/6BQ5
V5	Channel 1 Output	EL84/6BQ5
V6	Channel 2 AF Amp. - Phase Inverter	6U8A
V7	Channel 2 Output	EL84/6BQ5
V8	Channel 2 Output	EL84/6BQ5

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA HARMONY PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1	80	150V		PRS1500	BR8015	TC492	TD-80-150	TVA-1418	
C2	80	150V		PRS1500	BR8015	TC492	TD-80-150	TVA-1418	
C3A	20	350			C0330	FP376.9	TMT-37	TVLS-4635.4*	
B	▲30	350			BR4035	TC77	TD-40-350		
C	■40	350							
D	▲40	350							
C4	40	150		PRS1470	BR4015	TC48	TD-40-150	TVA-1413	①
C5	40	150		PRS1470	BR4015	TC48	TD-40-150	TVA-1413	①
C6	50	25		PRS1265	BBR50-25	TC29	TD-50-25	TVA-1206	②

① Some versions use 20mfd in this application.
② Some versions use 100mfd in this application.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C7	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C8	27		DI-27	DD-270	L10Q27	CCD-270	GP427	10TS-Q27
C9	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C10	1500		BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C11	3300		BPD-0033	DD-332	BYA10D33	CCD-332	B-233	5HK-D33
C12	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C13	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C14	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C15	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C16	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C17	47		DI-47	DD-470	L10Q47	CCD-470	GP447	10TS-Q47

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C18	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C19	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C20	100		BPD-0001	DD-101	L10T1	CCD-101	B-310	10TS-T10
C21	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C22	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C23	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C24	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C25	100		BPD-0001	DD-101	L10T1	CCD-101	B-310	10TS-T10
C26	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C27	27		DI-27	DD-270	L10Q27	CCD-270	GP427	10TS-Q27
C28	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C29	1500		BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C30	3300		BPD-0033	DD-332	BYA10D33	CCD-332	B-233	5HK-D33
C31	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C32	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C33	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C34	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C35	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C36	47		DI-47	DD-470	L10Q47	CCD-470	GP447	10TS-Q47
C37	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C38	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C39	100		BPD-0001	DD-101	L10T1	CCD-101	B-310	10TS-T10
C40	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C41	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C42	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C43	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C44	100		BPD-0001	DD-101	L10T1	CCD-101	B-310	10TS-T10

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA HARMONY PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K 150K Tap	½	1214	BT-66			FA55T15	Loudness, Channel 1
B	500K 150K Tap	½		STR-66			RU55T15	Loudness, Channel 2
C	Shaft						CS3500	
D	Switch			KR-1			US41	Power Off-On
R2A	500K	½	1213	B-59	AD47-500K-S		FA55L	Bass, Channel 1
B	500K	½		SR-59	Not Req.		RU55L	Bass, Channel 2
C	Shaft			Not Req.	KSS-3		CS3500	
R3A	500K	½	1213	B-59	AD47-500K-S		FA55L	Treble, Channel 1
B	500K	½		SR-59	Not Req.		RU55L	Treble, Channel 2
C	Shaft			Not Req.	KSS-3		CS3500	
R4A	500K	½	1215	B-59	A47-500K-S	Q11-133	U50	Balance
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R5	1.5meg	
R6	47K	
R7	100K	
R8	470Ω	
R9	100K	
R10	3.3meg	
R11	100K	
R12	100K	
R13	22K	
R14	47K	
R15	6.8meg	
R16	270K	
R17	470K	
R18	100K	
R19	100Ω	
R20	33K 1W	

ITEM No.	RATING	REMARKS
R21	100K	
R22	1500Ω	
R23	470K	
R24	470K	
R25	1500Ω 2W	
R26	270Ω 2W	
R27	15K	
R28	1.5meg	
R29	47K	
R30	100K	
R31	470Ω	
R32	100K	
R33	3.3meg	
R34	100K	
R35	100K	
R36	22K	

ITEM No.	RATING	REMARKS
R37	47K	
R38	6.8meg	
R39	270K	
R40	470K	
R41	100K	
R42	100Ω	
R43	33K 1W	
R44	100K	
R45	1500Ω	
R46	470K	
R47	470K	
R48	1500Ω 2W	
R49	4700Ω 1W	
R50	22K	
R51	22K	
R52	15K	

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	HARMONY PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V@ 1.17A	130V@ .720A	6.3 VCT @4.3A	14K6						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	HARMONY PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	6500Ω CT	16Ω Tap @8Ω	14W8							
T3	6500Ω CT	16Ω Tap @8Ω	14W8							

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					
	CURRENT (Measured)	HARMONY PART No.	INTERNATIONAL PART No.	ITT PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.200A		2E4	RE504	K200	SR200	
M2	.200A		2E4	RE504	K200	SR200	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			HARMONY PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M3	3AG	2A 250V			312002 (3AG 2A 250V)	342001	AGC 2	HKP

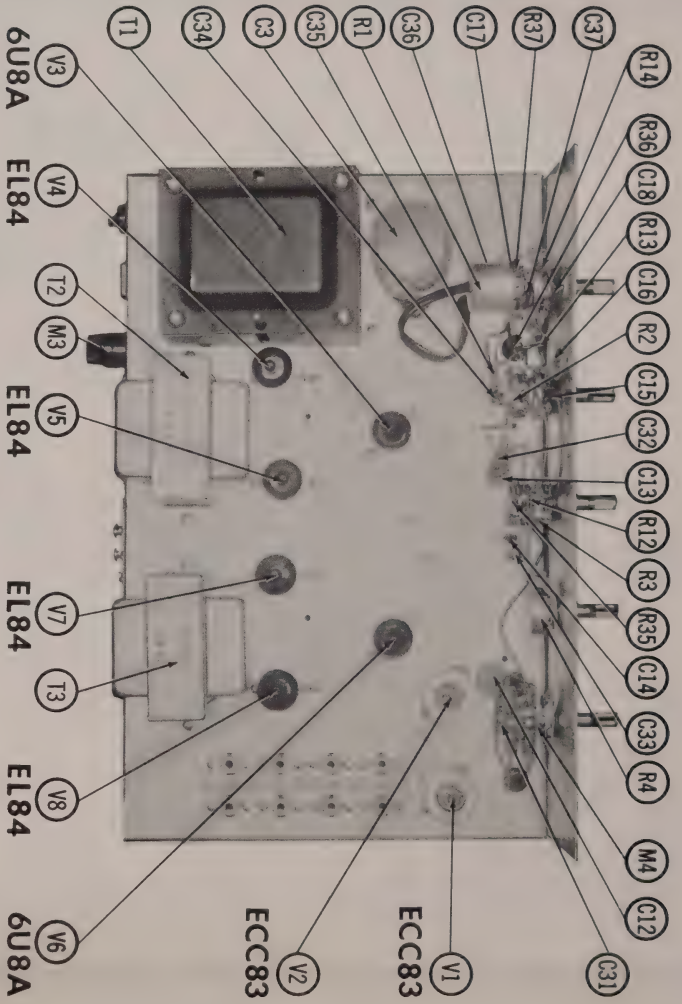
MISCELLANEOUS

ITEM No.	PART NAME	HARMONY PART No.	NOTES
M4	Switch		Function Selector

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

CHASSIS—TOP VIEW



PHOTOFACT® Folder

KNIGHT MODEL KN-740 (92SU429)

KNIGHT MODEL
KN-740 (92SU429)

KNIGHT MODEL
KN-740 (92SU429)

TRADE NAME	Knight Model KN-740 (92SU429)
SUPPLIER	Allied Radio Corp., 100 N. Western Ave., Chicago 80, Illinois
TYPE SET	AC Operated 10 Tube Multi-Input Stereo Amplifier
POWER SUPPLY	110 - 120 Volts AC, 60 Cycles RATING 150 Watts, 1.45 Amp. @117 Volts AC

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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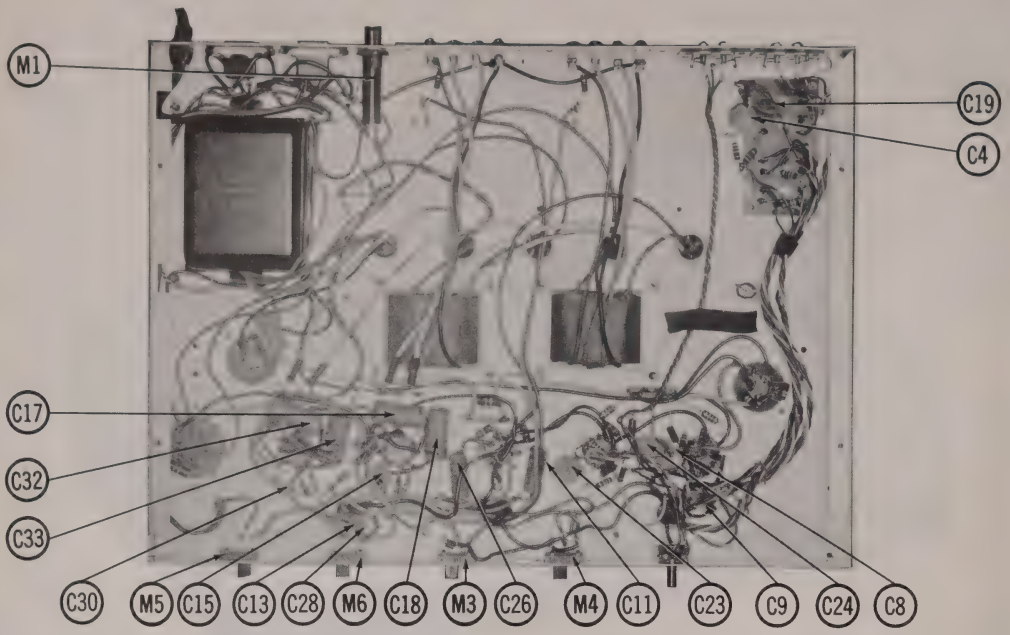
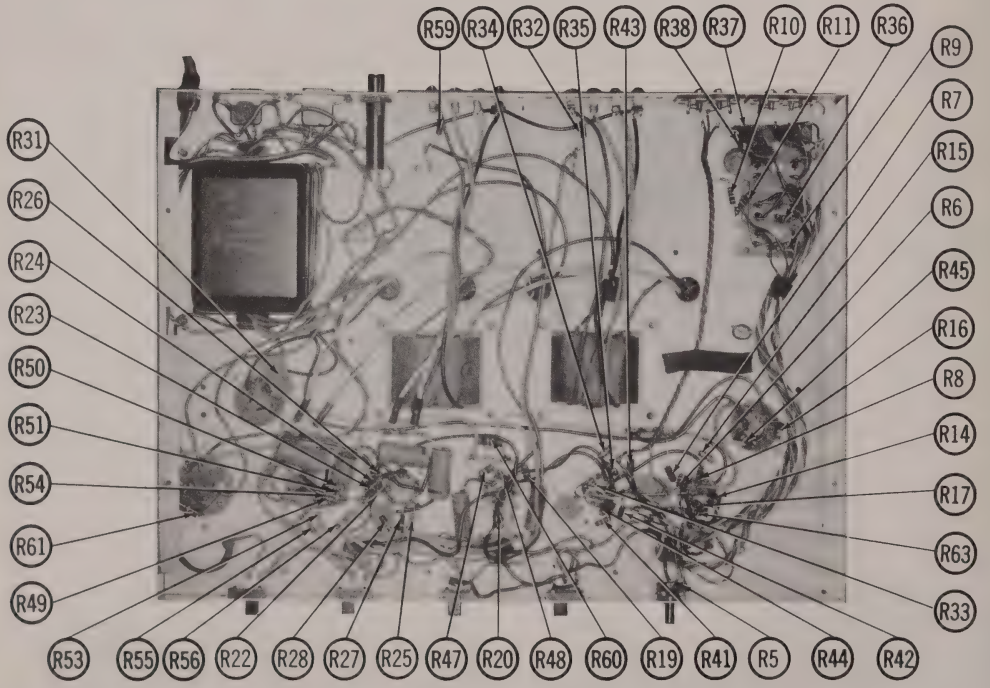
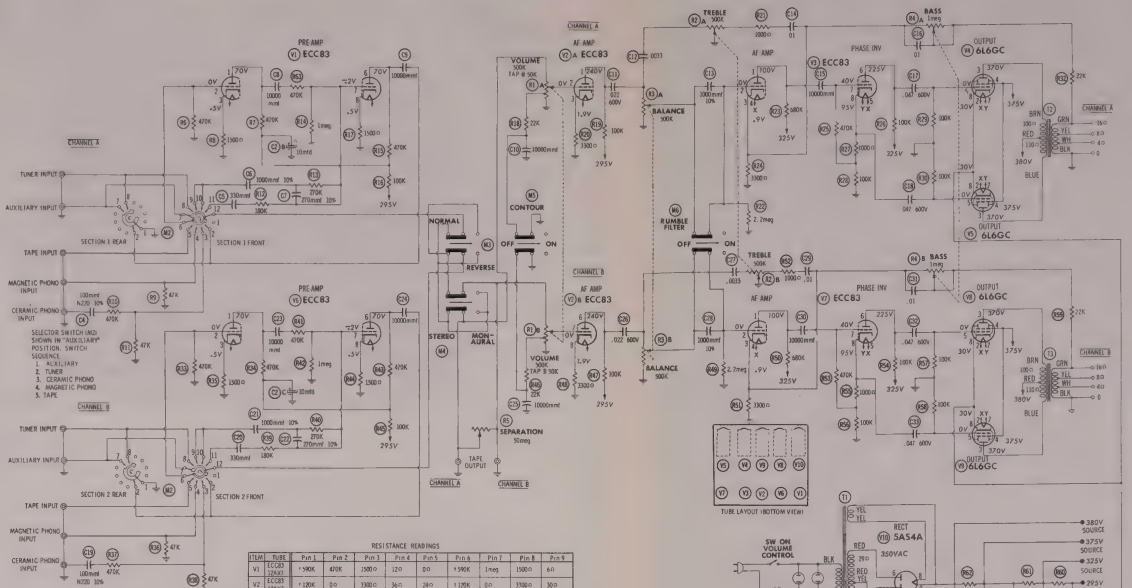
SET497 FOLDER 10



CHASSIS BOTTOM VIEW - CAPACITOR & MISC. IDENT.



CHASSIS BOTTOM VIEW - RESISTOR IDENT.



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC83 12AX7	+190K	470K	1500	120	0.0	+590K	1meg	1500	6.0
V2	ECC83 12AX7	+120K	0.0	3300	36.0	24.0	+125K	0.0	3300	30.0
V3	ECC83 12AX7	+690K	0.0	3330	36.0	36.0	+110K	570K	100K	30.0
V4	6L6GC	TP	36.0	+1000	+1000	100K	TP	36.0	36.0	
V5	6L6GC	TP	36.0	+1100	+1000	100K	NC	36.0	36.0	
V6	ECC83 12AX7	+590K	470K	1500	24.0	12.0	+590K	1meg	1500	18.0
V7	ECC83 12AX7	+690K	0.0	3300	36.0	36.0	+110K	570K	100K	36.0
V8	6L6GC	TP	36.0	+1000	+1000	100K	NC	36.0	36.0	
V9	6L6GC	TP	36.0	+1100	+1000	100K	TP	36.0	36.0	
V10	5A54A	TP	1	NC	26.0	NC	29.0	NC	1	

1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings
6. All controls at minimum, proper output load connected

1 THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
1 MEASURED FROM PIN 2 OF V10.
NC NO CONNECTION
TP TIE POINT

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KNIGHT MODEL KN-740 (925U429)

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆

ITEM No.	USE	TYPE
V1	Channel A Preamp.	ECC83/12AX7
V2	Channel A AF Amp. - Channel B AF Amp.	ECC83/12AX7
V3	Channel A AF Amp. - Channel A Phase Inv.	ECC83/12AX7
V4	Channel A Output	6L6GC
V5	Channel A Output	6L6GC
V6	Channel B Preamp.	ECC83/12AX7
V7	Channel B AF Amp. - Channel B Phase Inv.	ECC83/12AX7
V8	Channel B Output	6L6GC
V9	Channel B Output	6L6GC
V10	Rectifier	5AS4A

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA KNIGHT PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	450	CE-706A						
B	■10	450							
C	▲10	450							
D	10	450							
C2A	■10	300	CE-306K	AFH3-22	C0210	FP330.5	TMT-22	TVL-3580	
B	▲10	300							
C	10	300							
C3	500	50	CE-507A	AFH1-13-05		WP066		TVLS-1330.1*	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	100 N220 10%					*		10TCR-T10
C5	330		BPD-00033	DD-331	L10T33	CCD-331	B-333	10TS-T33
C6	1000 10%		DI-1000	DD-102	PM6D1	CCD-102	GP210	10TS-D10
C7	270 10%		DI-270	DD-271	L10T27	CCD-271	GP327	10TS-T27
C8	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C9	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C10	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C11	.022 600V		P688N-022	DD-203	CUB6S22	6DP-2-223	GEM-6122	6TM-S22
C12	.0033 200V		P288N-0033	D6-332	CUB6D33	6DP-1-332	GEM-6233	6TM-D33
C13	1000 10%		DI-1000	DD-102	PM6D1	CCD-102	GP210	10TS-D10
C14	.01 200V		P288N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C15	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C16	.01 200V		P288N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C17	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C18	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C19	100 N220 10%					*		10TCR-T10
C20	330		BPD-00033	DD-331	L10T33	CCD-331	B-333	10TS-T33
C21	1000 10%		DI-1000	DD-102	PM6D1	CCD-102	GP210	10TS-D10
C22	270 10%		DI-270	DD-271	L10T27	CCD-271	GP327	10TS-T27
C23	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C24	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C25	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C26	.022 600V		P688N-022	DD-203	CUB6S22	6DP-2-223	GEM-6122	6TM-S22
C27	.0033 200V		P288N-0033	D6-332	CUB6D33	6DP-1-332	GEM-6233	6TM-D33
C28	1000 10%		DI-1000	DD-102	PM6D1	CCD-102	GP210	10TS-D10
C29	.01 200V		P288N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C30	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C31	.01 200V		P288N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C32	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C33	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA KNIGHT PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½	RP-105AQ				FA55T54	Volume, Channel A
	50K Tap							
B	500K	½					RU55T54	Volume, Channel B
	50K Tap							
C	Shaft						CS3500	
D	Switch						US41	Power On-Off
R2A	500K	½	RP-105AM	B-613				Treble, Channel A
B	500K	½		SR-613				Treble, Channel B
R3A	500K	½	RP-105AN	B-60				Balance, Channel A
B	500K	½		SR-613				Balance, Channel B
R4A	1meg	½	RP-205G	B-70	AD47-1meg-Z		FB16A	Bass, Channel A
B	1meg	½		SR-70	Not Req.		RU16A	Bass, Channel B
C	Shaft			Not Req.	KSS-3		CS3500	
R5	50meg	1/4	RP-506					Separation

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R6	470K	
R7	470K	
R8	1500Ω	
R9	47K	
R10	470K	
R11	47K	
R12	180K	
R13	270K	
R14	1meg	
R15	470K	
R16	100K	
R17	1500Ω	
R18	22K	
R19	100K	
R20	3300Ω	
R21	1000Ω	
R22	2.2meg	
R23	680K	
R24	3300Ω	
R25	470K	

ITEM No.	RATING	REMARKS
R26	100K	
R27	1000Ω	
R28	100K	
R29	100K	
R30	100K	
R31	500Ω 5W	
R32	22K	
R33	470K	
R34	470K	
R35	1500Ω	
R36	47K	
R37	470K	
R38	47K	
R39	180K	
R40	270K	
R41	470K	
R42	1meg	
R43	470K	
R44	1500Ω	
R45	100K	

ITEM No.	RATING	REMARKS
R46	22K	
R47	100K	
R48	3300Ω	
R49	2.2meg	
R50	680K	
R51	3300Ω	
R52	1000Ω	
R53	470K	
R54	100K	
R55	1000Ω	
R56	100K	
R57	100K	
R58	100K	
R59	22K	
R60	10K 1W	
R61	10K 1W	
R62	100Ω 2W	
R63	470K	

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	KNIGHT PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V@ 1.45A	700 VCT @.200A	5V@ 3A	LP-0290A						
	SEC. 3	SEC. 4	SEC. 5							
	6.3 VCT @4.3A									

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	KNIGHT PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	5000Ω CT	16Ω Tap @ 8Ω, 4Ω	L0-0166							
T3	5000Ω CT	16Ω Tap @ 8Ω, 4Ω	L0-0166							

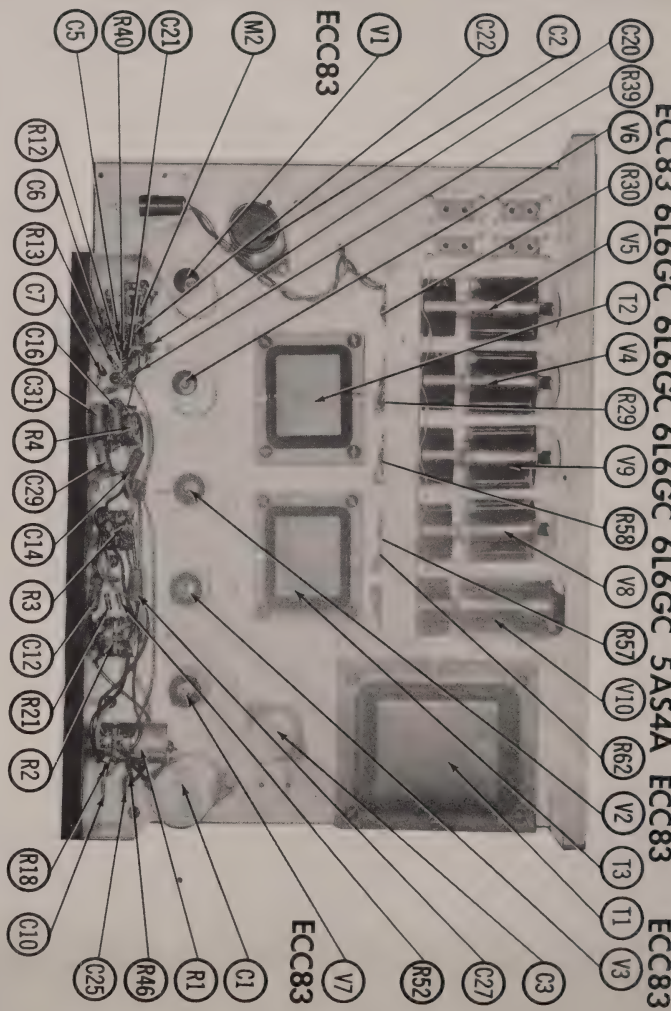
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			KNIGHT PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	3A 125V S/B			313003 (3A 125V S/B)	341001	MDX-3	

MISCELLANEOUS

ITEM No.	PART NAME	KNIGHT PART No.	NOTES
M2	Switch		Function Selector
M3	Switch		Normal-Reverse (DPDT Slide Type)
M4	Switch		Stereo-Monaural (DPDT, Slide Type)
M5	Switch		Contour (DPDT Slide Type)
M6	Switch		Rumble Filter (DPDT Slide Type)

CHASSIS—TOP VIEW



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LINCOLN MODEL 05BH

LINCOLN MODEL
05BH

LINCOLN MODEL
05BH

TRADE NAME	Lincoln Model 05BH (COLF-18810, COLY-18805) For 1960 Lincoln Automobiles		
MANUFACTURER	Bendix Radio Dov., Bendix Aviation Corp., Baltimore 4, Maryland		
TYPE SET	Battery Operated 5 Tube, 3 Transistor Custom Built Automobile AM Receiver		
POWER SUPPLY	12 Volt Storage Battery	RATING	1.2 Amp. @ 12.6 Volts DC
TUNING RANGE—BROADCAST	540 - 1605KC		1.4 Amp. @ 12.6 Volts DC (Seeking)

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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SET497 FOLDER 11

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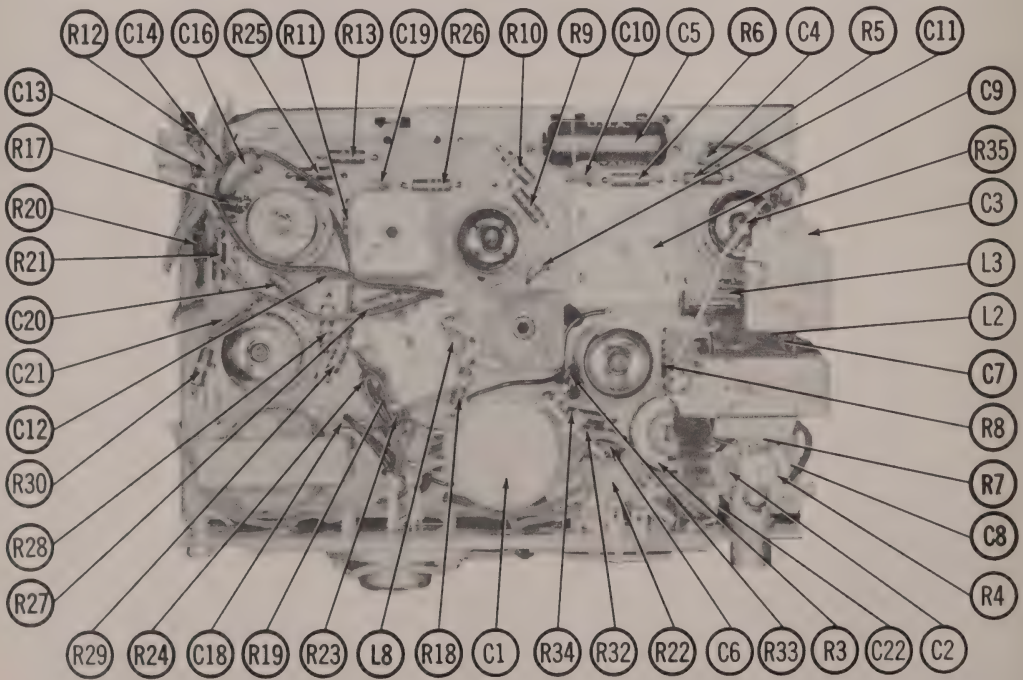
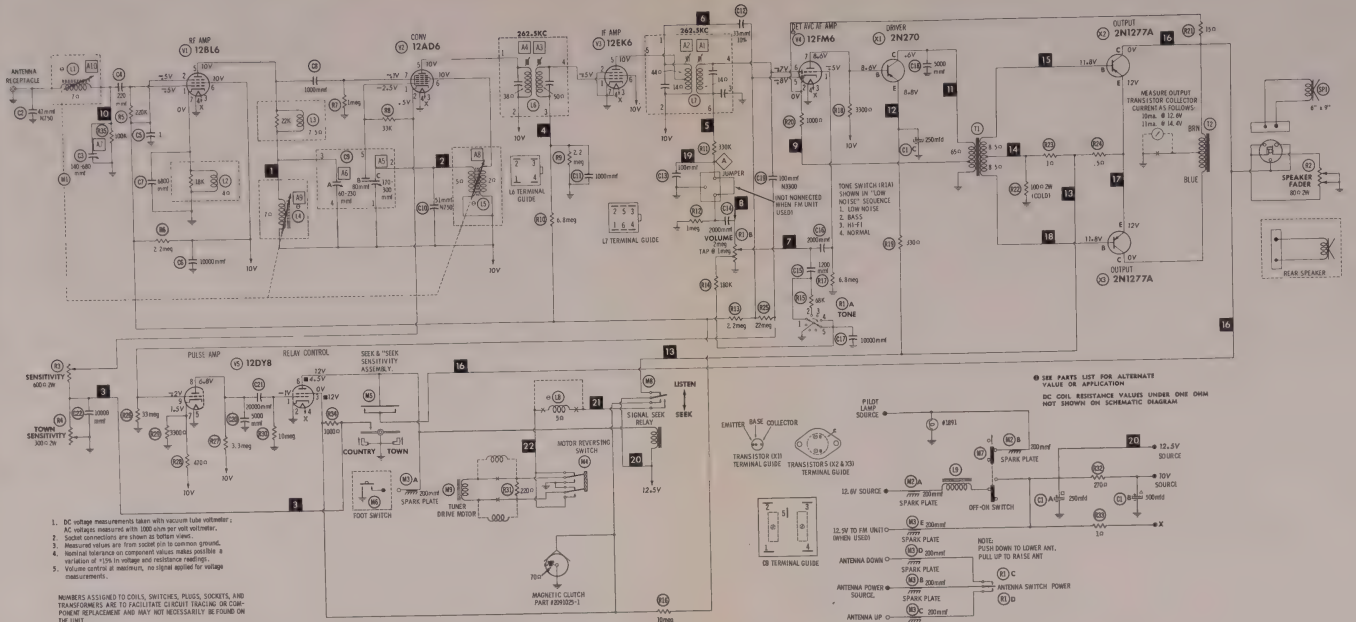
ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



PRINTED BOARD



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Nominal tolerance on component values makes possible a variation of ±5% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12BL6	3.8meg	3.6meg	1.5Ω	0Ω	1.28KΩ	1.27KΩ	4Ω		
V2	12AD6	34K	77KΩ	1.5Ω	0Ω	1.31KΩ	1.27KΩ	1meg		
V3	12EK6	2.2meg	0Ω	1.5Ω	0Ω	1.28KΩ	1.27KΩ	0Ω		
V4	12FM6	6.8meg	15Ω	1.5Ω	0Ω	5.5meg	1.3meg			
V5	12DY8	30meg	0Ω	60Ω	0Ω	1.5Ω	1.9Ω	1470Ω	13.3meg	15meg

1 MEASURED FROM JUNCTION OF R32 AND C1A.
TRANSISTOR CIRCUIT RESISTANCE FOR X1, X2 AND X3 ARE NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

With CircuiTrace
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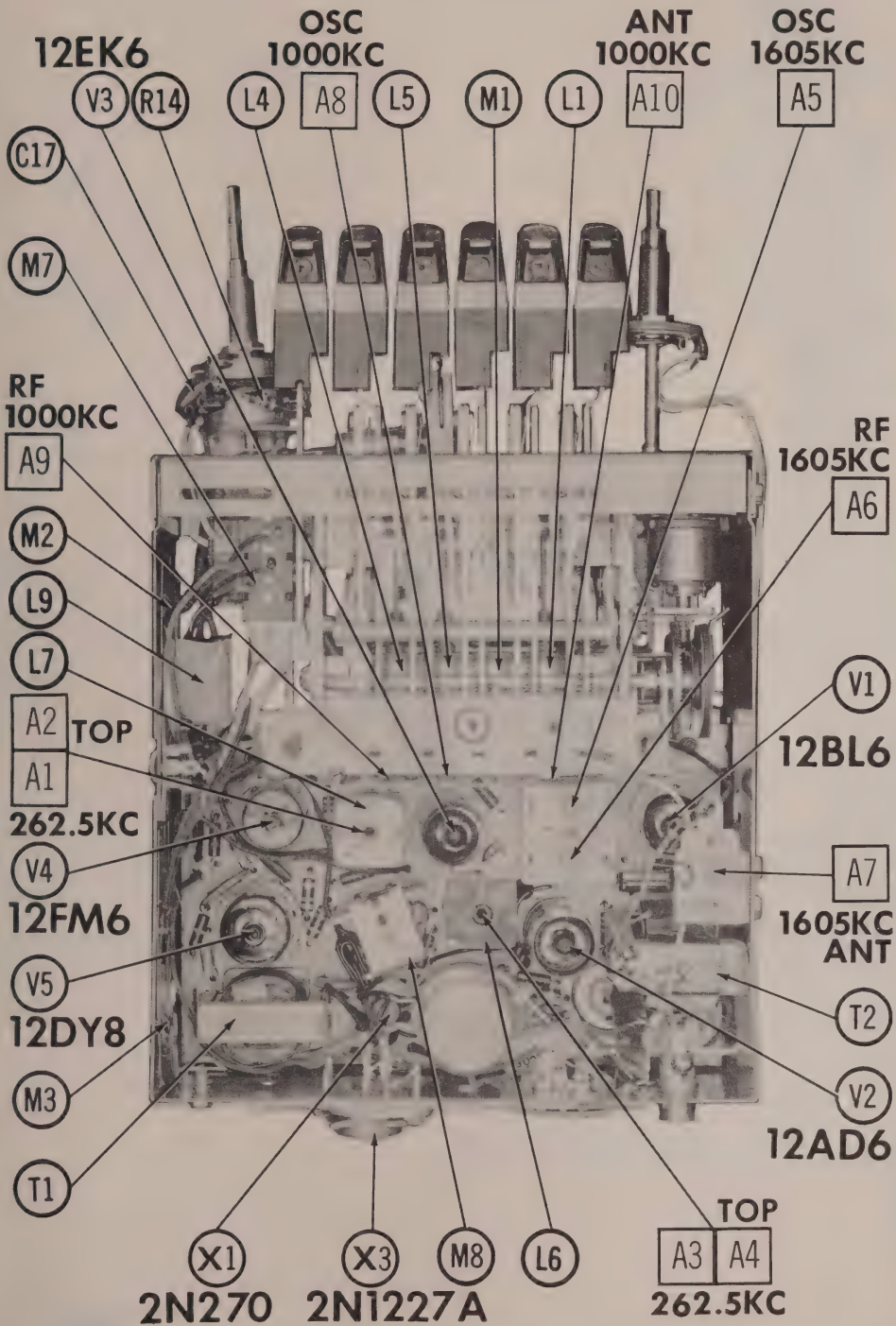
LINCOLN MODEL
0S8H



CHASSIS TOP VIEW

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools:
A1, A2, A3, A4...GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
A5, A6, A7.....GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528
A8, A9, A10....GENERAL CEMENT #9050-L, 9150
WALSCO #2521, 2524

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of Converter. Low side to chassis.	262.5KC (Unmod.)	High End Stop.	DC probe to point (A). Common to chassis.	A1, A2, A3, A4	Adjust for maximum deflection.
2.	Thru dummy (Fig. 1) to antenna receptacle.	1605KC	"	"	A5, A6, A7	Adjust for maximum output. Repeat Steps 1 and 2.
	Step 3 is not necessary unless tuner has been tampered with. If necessary, back tuning cores (A8, A9 and A10) out of coils but not out of forms. Repeat Step 2.					
3.	Thru dummy to antenna receptacle.	1000KC	Carriage ½" from high end stop.	DC probe to point (A). Common to chassis.	A8, A9, A10	Adjust for maximum deflection. Repeat Steps 2 and 3.
4.	"	1000KC @ 3 microvolts. (400∿ Mod.)	Tune to 1000KC signal.	Output Meter across voice coil.	R3	Adjust for 2.8 VRMS (Approx. 1 volt).
5.	"	1000KC @ 250 microvolts.	"	"	R4	Turn R4 fully counterclockwise. Press "Town" button. Turn R4 slowly until tuner stops seeking.
	Adjust generator for 125 microvolts. Press "Town" button. Tuner should not stop seeking. If necessary Repeat Steps 4 & 5.					
6.	With radio installed in car and antenna fully extended, tune in a weak station near 1000KC and adjust A7 for maximum output.					

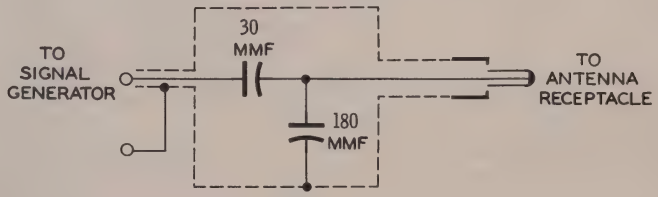


FIG. 1

PUSHBUTTON ADJUSTMENT
1. Pull pushbutton out.
2. Tune manually to desired station.
3. Press pushbutton in firmly.
4. Repeat for remaining pushbuttons.

PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	RF Amplifier	12BL6	V4	Det. -AVC-AF Amp.	12FM6 (12FK6) *
V2	Converter	12AD6	V5	Pulse Amp. - Relay Control	12DY8
V3	IF Amplifier	12EK6			

* Alternate

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N270	Driver		2N270	2N361	2N270	PNP
X2	2N1227A	Output	2N1227				PNP Note 1
X3	2N1227A	Output	2N1227				PNP Note 1

Note 1. X2 and X3 are a matched pair. When replacing, apply silicone grease to both sides of insulator. Tighten mounting screws securely.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	BENDIX PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	■250	16	220353-13	PWH3-00-94	C0005	PWP300.4			
B	▲500	16							
C	250	16							

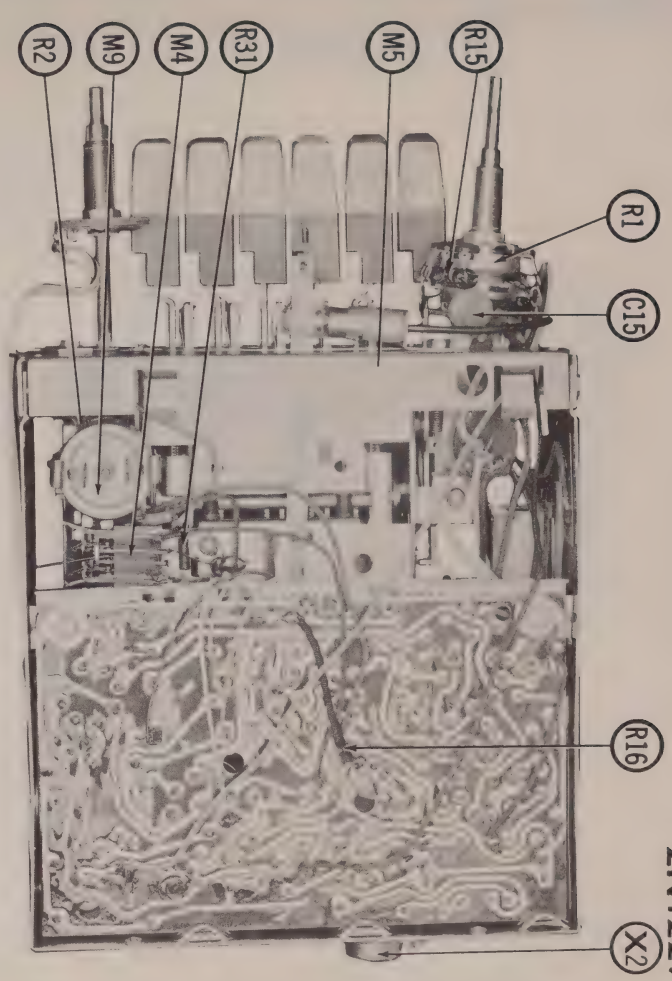
FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	47 N750		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C3	140-680	#219083-2						
C4	220		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C5	.1 100V		P288N-1	DF-104	CUB2P1	IDP-2-104	GEM-201	2TM-P1
C6	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C7	6800		BPD-0068	DD-682	BYA10D68	CCD-682	B-268	5HK-D68
C8	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C9A	60-230							
B	80	#219092-12	DI-82	DTZ-82	C10Q82	CCTO-820	CNO-482	10TCC-Q82
C	170-300							
C10	51 N750		N750-DI 47	TCN-51	C10Q51C	CCTN-470	CN7-447	10TCU-Q47
C11	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C12	33 10%		DI-33	DD-330	L10Q33	CCD-330	GP433	10TS-Q33
C13	100		BPD-0001	DD-101	L10T1	CCD-101	GP310	10TS-T10
C14	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C15	1200		DI-1200	DD-122	L10DI2	CCD-122	B-212	10TS-D12
C16	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C17	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C18	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C19	100 N3300	#220332-39				*		
C20	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C21	20000		BPD-02	DD-203	BYA10S2	CCD-203	B-120	5HK-S20
C22	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10

\# Bendix Part Number.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CHASSIS—BOTTOM VIEW



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PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING RESIST-ANCE	RATING WATTS	REPLACEMENT DATA BENDIX PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	Switch		2091032-1					Tone Switch
B	2meg	½					UE1769-S	Volume
	1meg Tap							
C	Switch							Push Ant. Down Switch
D	Switch							Pull Ant. Up Switch
R2	80Ω	2(WW)	219679-4					Speaker Fader
R3	600Ω	2(WW)	2090181-2			110-600	PFL-600	Sensitivity
R4	300Ω	2(WW)	2090181-4					Town Sensitivity

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R5	220K	
R6	2.2meg	
R7	1meg	
R8	33K	
R9	2.2meg	
R10	6.8meg	
R11	330K	
R12	1meg	
R13	2.2meg	
R14	180K	
R15	68K	

ITEM No.	RATING	REMARKS
R16	10meg	
R17	6.8meg	
R18	3300Ω	
R19	330Ω	
R20	1000Ω	
R21	15Ω	
R22	100Ω Cold 2W	#2090948-5
R23	1Ω	#2090438-18
R24	.5Ω	#2090438-19
R25	22meg	
R26	33meg	

ITEM No.	RATING	REMARKS
R27	3.3meg	
R28	470Ω	
R29	3300Ω	
R30	10meg	
R31	220Ω	
R32	270Ω	
R33	1Ω	#2090438-18
R34	1000Ω	
R35	100K	

Bendix Part Number, R23 and R33 are 11 1/4" length of resistance wire; R24 is 5 3/4" length of resistance wire.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA BENDIX PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Ant. Coil	①						
L2	Cathode Choke	2090088-1②	19-3060 *	19-3060 *	TV-193 *	6110 *		50uh
L3	Image Trap	2090088-7③						
L4	RF Coil	①						
L5	Osc. Coil	①						
L6	Input IF Trans.	2090907-4	16-6756	16-6756	BC-344	13-PH1		
L7	Output IF Trans.	2090877-3						
L8	Motor RF Choke	2090671-2	19-1009	19-1009	BC-565	4611		7.5uh④
L9	"A" Lead Choke	216188-14						50uh

① Part of Tuner Coil Assembly Part #2090131-21 or tuner (M1).
② Wound on 18K Resistor.
③ 22K Resistor Moulded into form.
④ IRC Part #CL-1. (Not used in some versions.)
* Parallel With 18K Resistor.

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO PRI.	TURNS RATIO SEC.	REPLACEMENT DATA BENDIX PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	1.8	1	2090433-3						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA BENDIX PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	16Ω CT	8-10Ω	2090266-4							

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA BENDIX PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	6"x 9"	PM	8-10Ω	2091269-8	69A3Z8	

MISCELLANEOUS

ITEM No.	PART NAME	BENDIX PART No.	NOTES
M1	Tuner	2091033-2	Complete, Includes Mtg. Plate Assembly & Pushbuttons
M2A	Spark Plate	220267-9	200mmf, Power (White)
B	Spark Plate		200mmf, Pilot Lamp (Blue)
M3A	Spark Plate		200mmf, Foot Switch (Orange)
B	Spark Plate		200mmf, Antenna Power (Yellow)
C	Spark Plate	220267-19	200mmf, Antenna Up (Red)
D	Spark Plate		200mmf, Antenna Down (Green)
E	Spark Plate		200mmf, FM (Black)
M4	Switch	2090051-3	Motor Reversing
M5	Switch	2091290-1	Seek & Seek Sensitivity Assembly
M6	Switch	2090403-3	Footswitch
M7	Switch	2090331-1	Off-On
M8	Relay	2091030-1	Signal Seek
M9	Motor	2091031-1	DC, Tuner Drive
	Printed Board	2091038-1	Less Tubes

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob Ass'y.	2091044-1	Tuning, Volume
Pushbutton	2091292-1	Station
Pushbutton	2091293-1	Off
Seek Bar	2091021-1	Town (Less Spring)
Seek Bar	2091021-2	Country (Less Spring)
Pointer Ass'y.	2090129-19	
Dial Glass	2091010-1	

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Bonding Strap	Use BELDEN No. 8861

PHOTOFACT® Folder with CIRCUITRACE®

LINMARK MODEL T-63

TRADE NAME	Linmark Model T-63		
IMPORTER	Shriro, Inc., 276 Fourth Ave., New York 10, N. Y.		
TYPE SET	Battery Operated Transistorized Portable AM Receiver		
POWER SUPPLY	9 Volts DC	RATING	7 MA @ 9 Volts DC (No Signal, Min. Volume)
TUNING RANGE—BROADCAST	535 - 1650KC		10 MA @ 9 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools: A4, A6.....GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Loop	455KC (400∿ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.	"	1600KC	1600KC	"	A4	"
3.	"	600KC	600KC	"	A5	"
4.	"	1400KC	Tune to 1400KC signal.	"	A6	Adjust for maximum output while rocking tuning gang.

DISASSEMBLY

1. Remove 3 screws holding front escutcheon. Remove escutcheon.
2. Remove screw holding dial indicator.
3. Remove rear cover.
4. Remove 3 screws holding printed board. Remove board.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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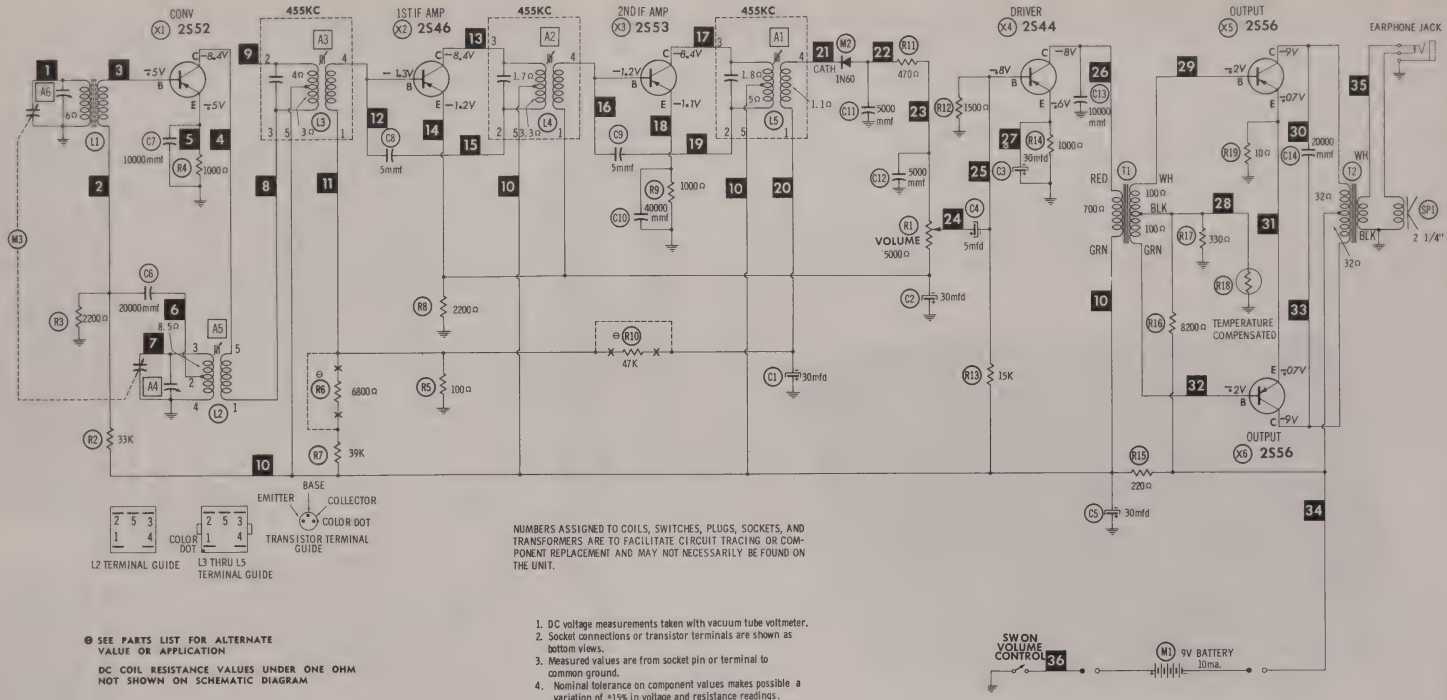
JF887

LINMARK MODEL T-63
LINMARK MODEL T-63
SET 497 FOLDER 12



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE®

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LINMARK MODEL T-63

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2S52	Converter		2N412	2N486	2N411	PNP
X2	2S49	1st IF Amplifier					PNP
X3	2S53	2nd IF Amplifier		2N410	2N483	2N410	PNP
X4	2S44	Driver		2N406	2N362	2N406	PNP
X5	2S56	Output		2N408	2N632	2N408	PNP
X6	2S56	Output		2N408	2N632	2N408	PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	LINMARK PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	30	3		XPP-3030	NLW30-6	TT6X30	ML30-6	TE-1092	
C2	30	3		XPP-3030	NLW30-6	TT6X30	ML30-6	TE-1092	
C3	30	3		XPP-3030	NLW30-6	TT6X30	ML30-6	TE-1092	
C4	5	3		XPP-3005	NLW5-6	TT6X5	ML5-6	TE-1052.2	
C5	30	6		XPP-6030	NLW30-6	TT6X30	ML30-6	TE-1092	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA						
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	EIMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.	
C6	20000		C80V203AM	DDM-203	H-05S2		TA-120	TG-S20	
C7	10000		C80V103AM	DDM-103	H-05S1		TA-110	TG-S10	
C8	5		NPO-DI 5.0	DTZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50	
C9	5		NPO-DI 5.0	DTZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50	
C10	40000								
C11	5000		C80V502AM	DDM-502	H-05D5		TA-250	TG-D50	
C12	5000		C80V502AM	DDM-502	H-05D5		TA-250	TG-D50	
C13	10000		C80V103AM	DDM-103	H-05S1		TA-110	TG-S10	
C14	20000		C80V203AM	DDM-203	H-05S2		TA-120	TG-S20	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	LINMARK PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	5000Ω	1/10		B16-214				Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	33K	
R3	2200Ω	
R4	1000Ω	
R5	100Ω	
R6	6800Ω	Note 1
R7	39K	

ITEM No.	RATING	REMARKS
R8	2200Ω	
R9	1000Ω	
R10	47K	Note 1
R11	470Ω	
R12	1500Ω	
R13	15K	

ITEM No.	RATING	REMARKS
R14	1000Ω	
R15	220Ω	
R16	8200Ω	
R17	330Ω	
R18	Temp. Comp.	
R19	10Ω	

Note 1. Not used in some versions.

PRINTED BOARD

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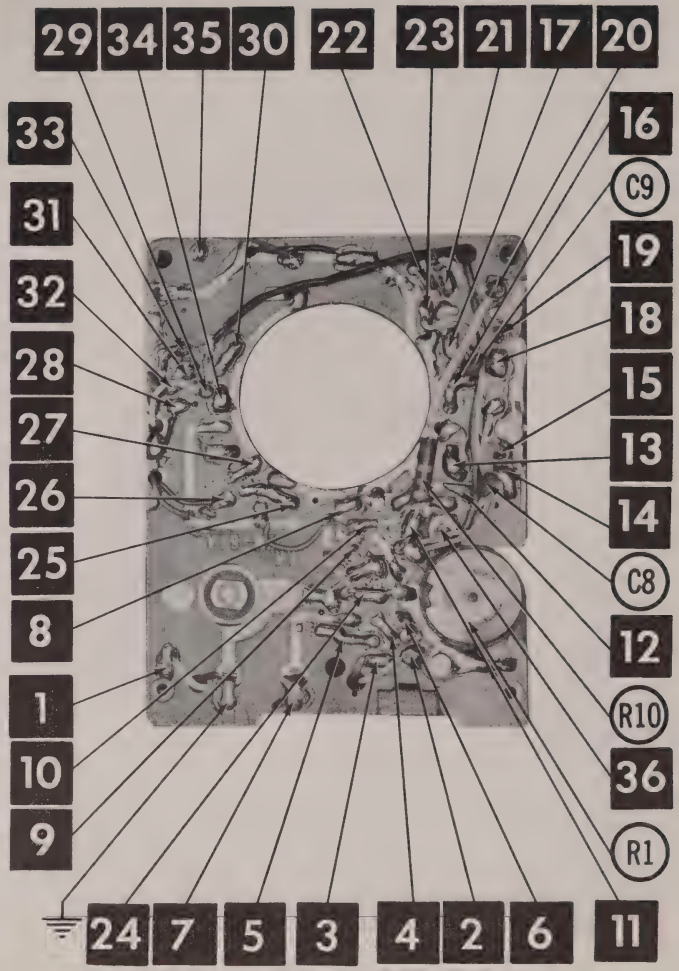


PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		LINMARK PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick							
L2	Osc. Coil							
L3	1st IF Trans.							
L4	2nd IF Trans.							
L5	3rd IF Trans.							

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	LINMARK PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1	1	M-6T1						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	LINMARK PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	800Ω CT	6-8Ω		TR-104			TA-25	TR-104		

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	LINMARK PART No.	QUAM PART No.	
SP1	2 1/4"	PM	6-8Ω			

BATTERIES

ITEM No.	VOLTAGE	LINMARK PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	9V			2U6		216		M-1604	

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		LINMARK PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	1N60		1N60	1N60	1N60	Detector (Pigtail)

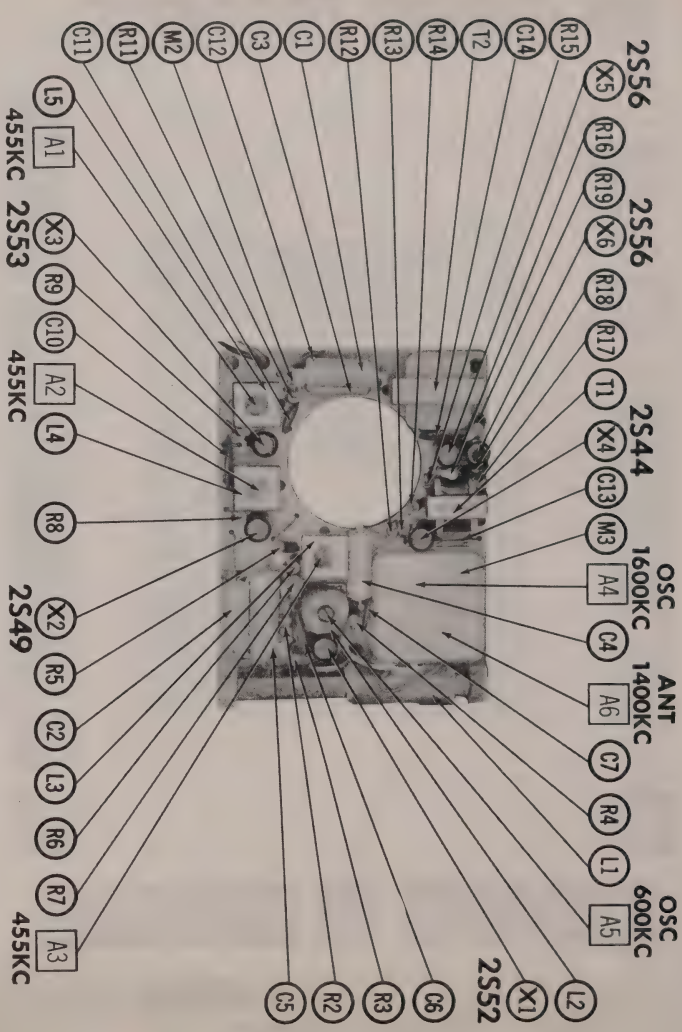
MISCELLANEOUS

ITEM No.	PART NAME	LINMARK PART No.	NOTES
M3	Tuning Cap Printed Board	YTKM-61A	2 Gang

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW



PHOTOFACT® Folder with CIRCUITRACE®

NEC MODEL NT-61

NEC MODEL NT-61

NEC MODEL NT-61

TRADE NAME	NEC Model NT-61
IMPORTER	Kanematsu New York, Inc., Import & Export, 150 Broadway, New York 38, N. Y.
TYPE SET	Battery Operated Transistorized Portable AM Receiver
POWER SUPPLY	9 Volts DC
RATING	5MA @ 9 Volts DC (No signal, Min. Volume)
TUNING RANGE	BROADCAST 535-1650KC
	9MA @ 9 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1, A2, A3, A5 ..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, WALSCO #2515, 2531, 2532 8989

A4, A6 ..... GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Loop	455KC (400∿ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.	"	1600KC	1600KC	"	A4	"
3.	"	600KC	600KC	"	A5	"
4.	"	1400KC	Tune to 1400KC signal	"	A6	Adjust for maximum output while rocking tuning gang.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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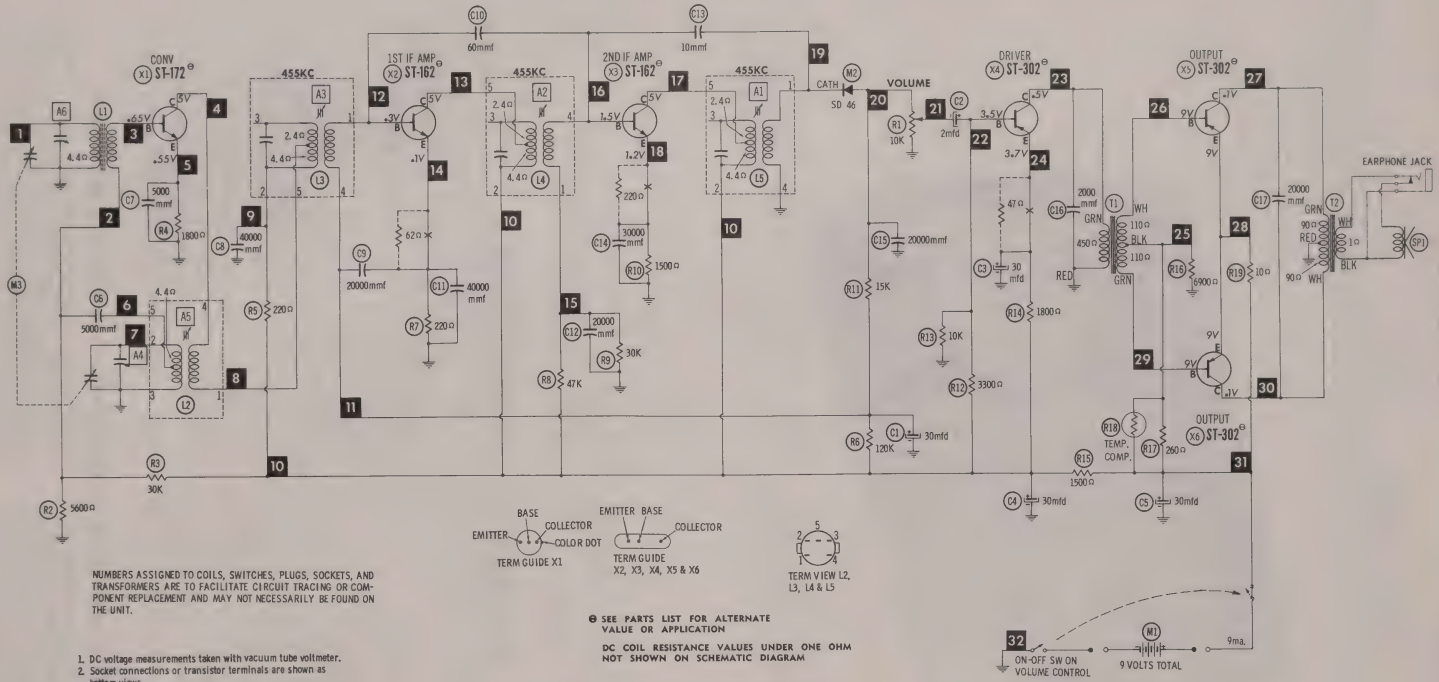
JF901

SET 497 FOLDER 13



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

TERM GUIDE X1

TERM GUIDE X2, X3, X4, X5 & X6

TERM VIEW L2, L3, L4 & L5

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
with CIRCUITRACE®

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NEC MODEL NT-61

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	ST-172 *	Converter					NPN
X2	ST-162 *	1st IF Amplifier					NPN
X3	ST-162 *	2nd IF Amplifier					NPN
X4	ST-302 †	Driver					PNP
X5	ST-302 †	Output					PNP
X6	SR-302 †	Output					PNP

* Alternate Type 2T-76. † Alternate Type ST-303.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	NEC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	30	6	TRG-111G	XPP-6030	NLW30-6	TT6X25	ML30-6	TE-1092	
C2	2	12	TRG-111E		NLW2-50	TT12X2			
C3	30	6	TRG-111G	XPP-6030	NLW30-6	TT6X25	ML30-6	TE-1092	
C4	30	6	TRG-111G	XPP-6030	NLW30-6	TT6X25	ML30-6	TE-1092	
C5	30	6	TRG-111G	XPP-6030	NLW30-6	TT6X25	ML30-6	TE-1092	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C6	5000		BPD-005	DD-502	H-05D5	CCD-502	B-250	5HK-D50
C7	5000		BPD-005	DD-502	H-05D5	CCD-502	B-250	5HK-D50
C8	40000	#TRG-113G						
C9	20000		C80V203AM	DA-203	H-05S2		TA-120	TG-S20
C10	60		NPO-SI 62	TCZ-62	C10Q62C			
C11	40000	#TRG-113G						
C12	20000		C80V203AM	DA-203	H-05S2		TA-120	TG-S20
C13	10		NPO-SI 10	TCZ-10	C10Q10C	CCTO-100	CNO-410	10TCC-Q10
C14	30000							
C15	20000		C80V203AM	DA-203	H-05S2		TA-120	TG-S20
C16	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C17	20000		C80V203AM	DA-203	H-05S2		TA-120	TG-S20

NEC Part Number.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	NEC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	10K	1/4	TRG-206	B16-216				Volume and Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	5600Ω	
R3	30K	
R4	1800Ω	
R5	220Ω	
R6	120K	
R7	220Ω	

ITEM No.	RATING	REMARKS
R8	47K	
R9	30K	
R10	1500Ω	
R11	15K	
R12	3300Ω	
R13	10K	

ITEM No.	RATING	REMARKS
R14	1800Ω	
R15	1500Ω	
R16	6900Ω	
R17	260Ω	
R18	Temp. Comp.	#TRG-148
R19	10Ω	

NEC Part Number.

PRINTED BOARD

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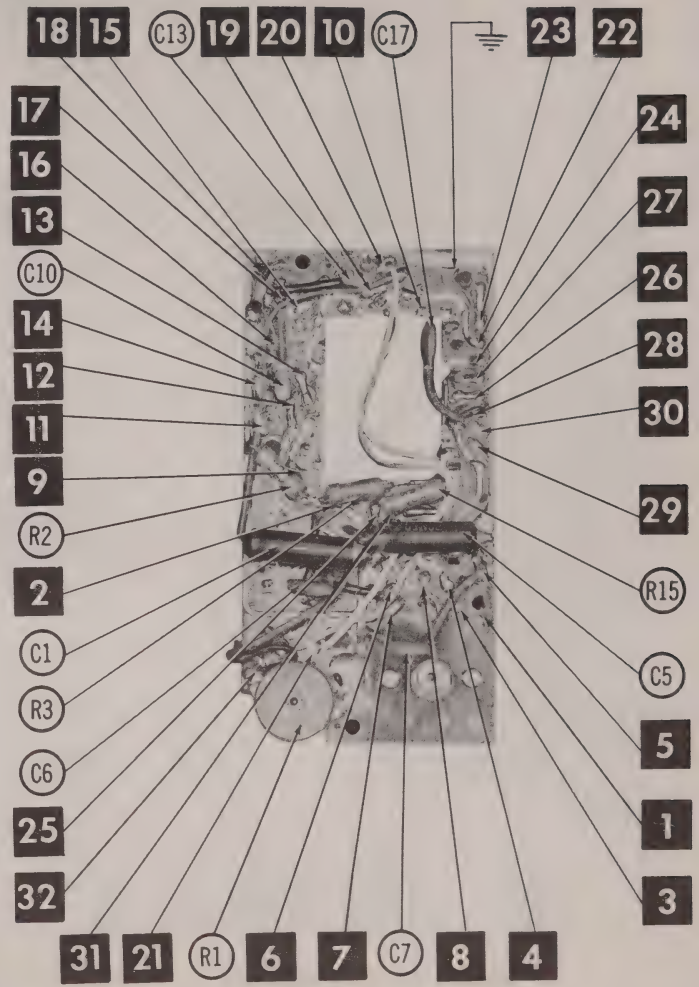


PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		NEC PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick	TRG-203						
L2	Osc. Coil	TRG-163						
L3	1st IF Trans.	TRG-164						
L4	2nd IF Trans.	TRG-164						
L5	3rd IF Trans.	TRG-164						

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	NEC PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1	1	TRG-168						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	NEC PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	1800Ω CT	6-8Ω	TRG-205				TA-25 ①			① Use 4Ω sec. tap.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	NEC PART No.	QUAM PART No.	
SP1	2 1/4"	PM	6-8Ω	TRG-209	22A06Z8	

BATTERIES

ITEM No.	VOLTAGE	NEC PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	9V	BL-006P		2U6		216		M-1604	

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		NEC PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	SD-46		1N60	1N60	1N60	Detector (Pigtail)

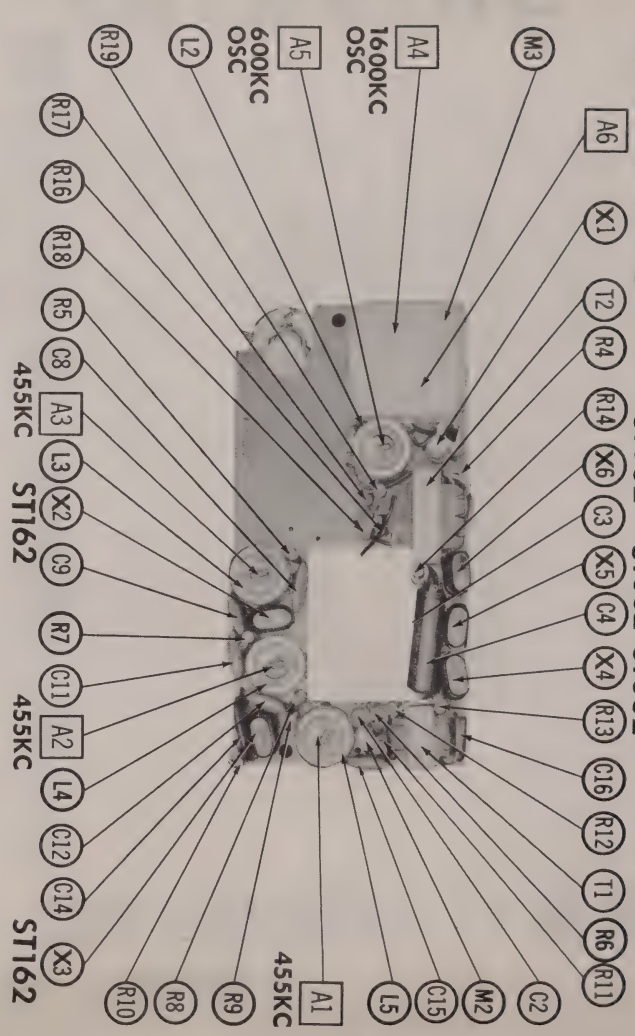
MISCELLANEOUS

ITEM No.	PART NAME	NEC PART No.	NOTES
M3	Tuning Cap.	TRG-207	2 Gang

WIRING DATA

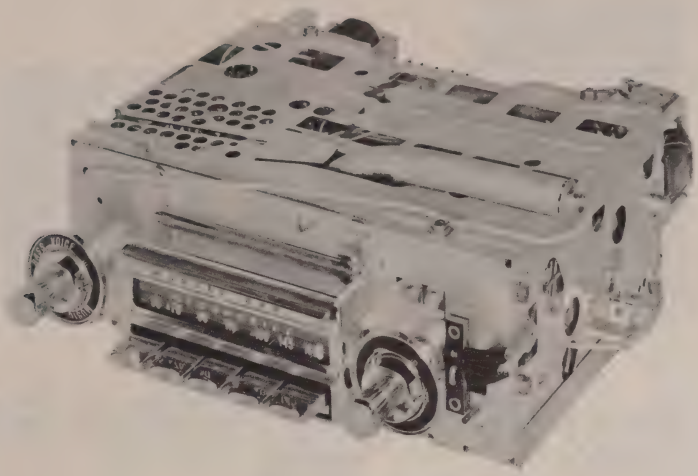
General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW



PHOTOFACT® Folder with CIRCUITRACE®

OLDSMOBILE MODEL 989277



TRADE NAME	Oldsmobile Model 989277 (For 1960 Oldsmobile Automobiles)
MANUFACTURER	Delco Radio Div., G.M. Corp., Kokomo, Indiana
TYPE SET	Battery Operated 5 Tube, 1 Transistor Custom Built Automobile AM Receiver
POWER SUPPLY	12 Volt Storage Battery RATING 2.8 Amp. @ 12.6 Volts DC
TUNING RANGE—BROADCAST	535 — 1615KC (11A When Tuning)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools:
A1 thru A4..... GENERAL CEMENT #9440
A5, A9, A10... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532
A6, A7, A8.... GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of Converter. Low side to chassis.	262KC (400~ Mod.)	High Freq. End Stop.	DC probe to point Ⓐ. Common to chassis.	A1, A2, A3	Adjust for maximum deflection.
2.	"	"	"	"	A4	Adjust for MINIMUM deflection.
	Check setting of Oscillator core (A5). Rear of core should be 1 5/8" from mounting end of coil form.					
3.	High side thru 68mmf to antenna receptacle. Low side to chassis.	1615KC	"	"	A6, A7, A8	Adjust for maximum deflection.
4.	"	600KC	600KC Signal	"	A9, A10	"
5.	"	1615KC	1615KC Signal	"	A7, A8	"
6.	"	1100KC	1100KC Signal	"		Adjust pointer adjustment until pointer coincides with 1100 on dial.
7.	With radio installed in car and antenna fully extended, tune in a weak station near 1000KC and adjust A8 for maximum output.					

PUSHBUTTON ADJUSTMENT

1. Pull pushbutton out.
2. Tune manually to desired station.
3. Press pushbutton in firmly.
4. Repeat for remaining pushbuttons.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KD106

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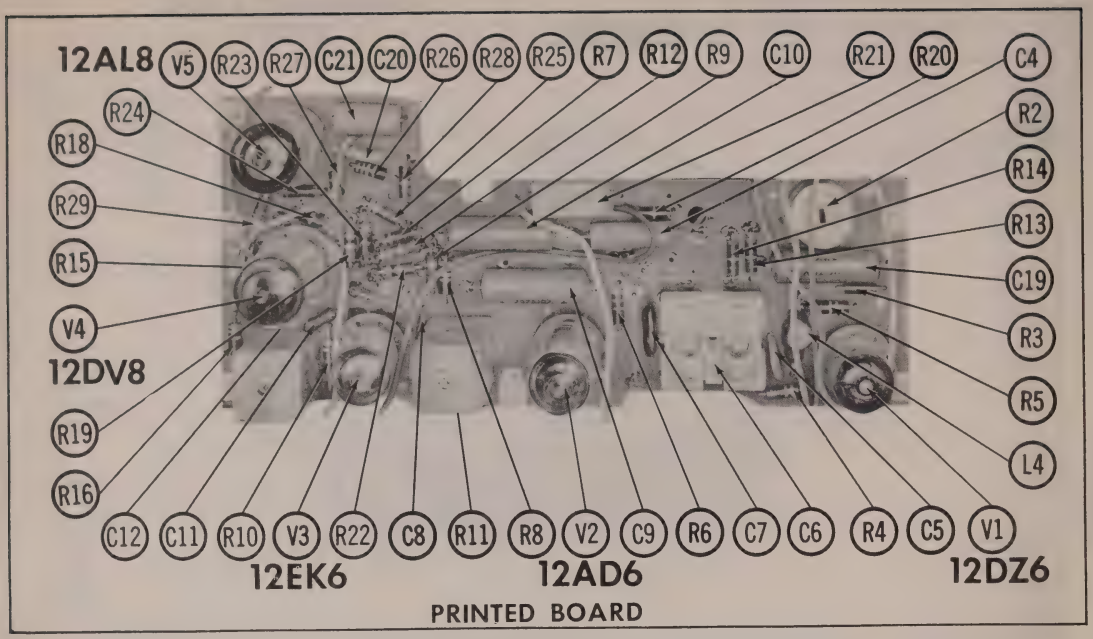
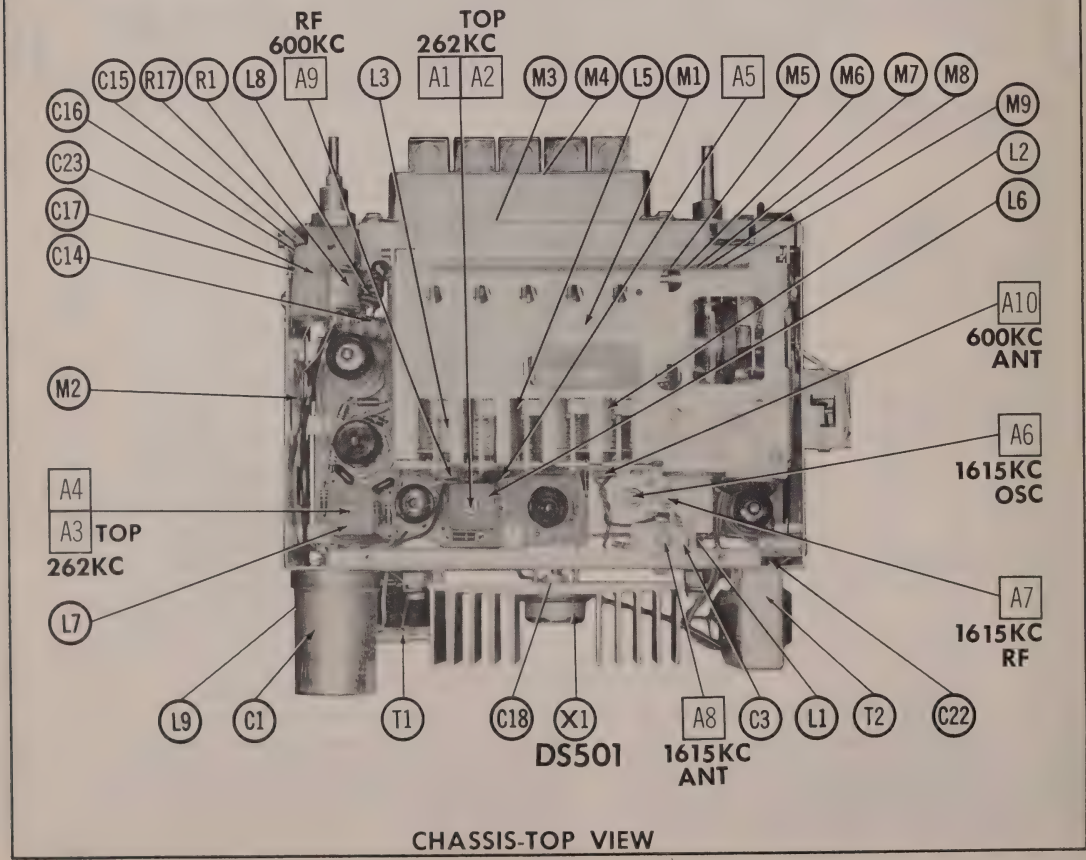
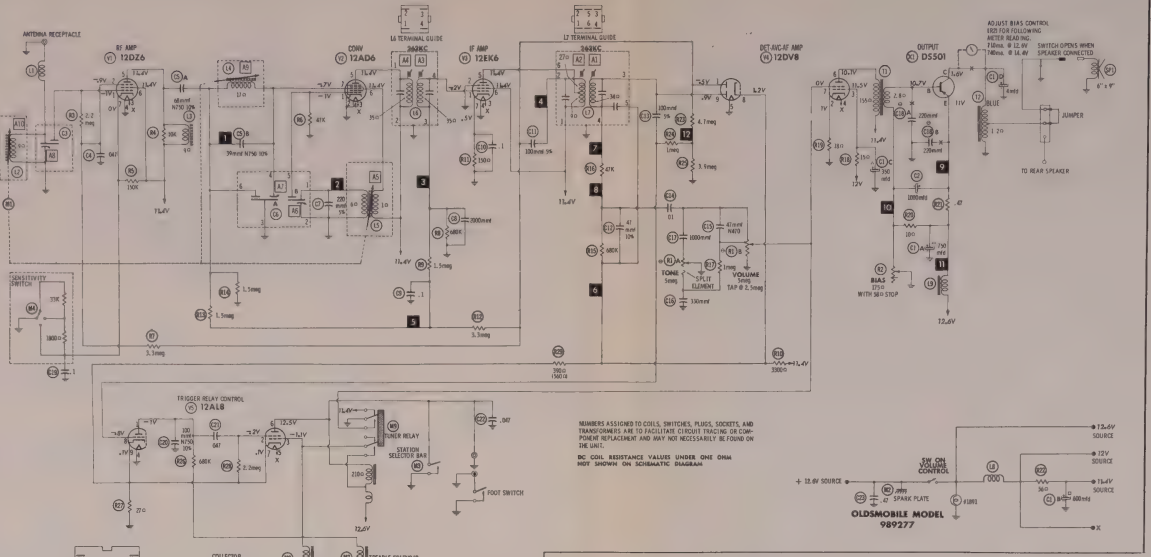
OLDSMOBILE MODEL 989277
OLDSMOBILE MODEL 989277
SET 497 FOLDER 14



PRINTED BOARD



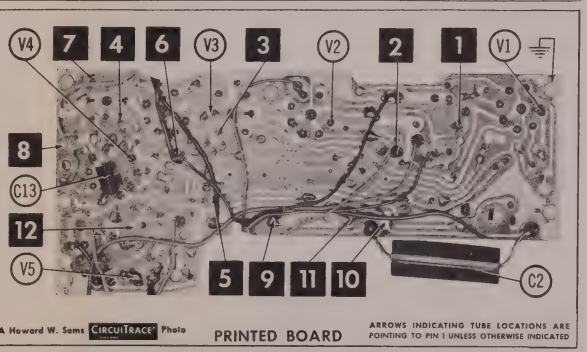
CHASSIS-TOP VIEW


ANTENNA RECEPTACLE
RF AMP V1 12DZ6
CONV V2 12AD6
IF AMP V3 12EK6
DET-AVC-AF AMP V4 12DV8
OUTPUT V5 DS501
L6 TERMINAL GUIDE 2AB9C
L7 TERMINAL GUIDE 2AB9C
ADJUST BIAS CONTROL FOR FOLLOWING METER READING: 7 ohms @ 12.6V 140ms @ 14.4V
SWITCH OPENS WHEN SPEAKER CONNECTED
JUMPER
TO REAR SPEAKER
SENSITIVITY SWITCH
TONE 5meg SPLIT ELEMENT
VOLUME 5meg TAP @ 2.5meg
BIAS 1350 WITH 360 STOP
TRIGGER RELAY CONTROL V6 12AL8
TUNER RELAY
STATION SELECTOR BAR
FOOT SWITCH
EMITTER
COLLECTOR
BASE
TRANSISTOR TERMINAL GUIDE
POWER SOLENOID
TREADLE SOLENOID
C6 TERMINAL GUIDE
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
+ 12.6V SOURCE
ON VOLUME CONTROL
SPARK PLATE
12.6V SOURCE
7.2V SOURCE
7.4V SOURCE
OLDSMOBILE MODEL 989277

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12DZ6	9meg	7meg	1Ω	0Ω	65Ω	56Ω	0Ω		
V2	12AD6	47K	9Ω	1Ω	0Ω	90Ω	57Ω	1.2meg		
V3	12EK6	680K	0Ω	1Ω	0Ω	65Ω	56Ω	150Ω		
V4	12DV8	3.4meg	18Ω	15Ω	1Ω	0Ω	135Ω	8Ω	435Ω	840K
V5	12AL8	INF	2.2meg	INF	0Ω	1Ω	250Ω	27Ω	4.8meg	27Ω

TRANSISTOR CIRCUIT RESISTANCE FOR X1 NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.



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PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	RF Amplifier	12DZ6	V4	Det. -AVC-AF Amp.	12DV8
V2	Converter	12AD6	V5	Trigger Relay Control	12AL8
V3	IF Amplifier	12EK6			

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	DS-501	Output	2N235A			2N677 *	PNP

* New Mounting Hole Required.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	DELCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲750	16	7273728	AFH4-20-75	D0187	WP401.5		TVLS-4204*	①
B	■600	16							
C	▲350	16							
D	4	11.5							
C2	1000	1	7271557	PRS1130	BR1000-6	TC-110	TD-1000-6	TVA-1104	

① Some versions may use 750-750-350-4mfd (Part #7273847) in this application.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3		#7275275						
C4	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C5A	68 N750 10%		N750-DI 68	DTN-68	C10Q68U	CCTN-680	CN7-468	10TCU-Q68
B	39 N750 10%			TCN-39	C10Q39U	CCTN-390	CN7-439	10TCU-Q39

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C6A		#7273693						
B								
C7	220 5%		1469-00022	TCZ-220	22R5T22	CM-19B-221J	CNO-322	MS-322
C8	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C9	.1 75V		P288N-1	DF-104	CUB2P1	1DP-2-104	GEM-201	2TM-P1
C10	.1 75V		P288N-1	DF-104	CUB2P1	1DP-2-104	GEM-201	2TM-P1
C11	100 5%		1469-0001	TCZ-100	22R5T1	CM-19B-101J	MCE235	MS-310
C12	47 10%		1469-000047	TCZ-47	22R5Q47	CM-19B-470K	CNO-447	MS-447
C13	100 5%		1469-0001	TCZ-100	22R5T1	CM-19B-101J	MCE235	MS-310
C14	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C15	47 N470					*		
C16	330		DI-330	DD-331	L10T33	CCD-331	GP333	10TS-T33
C17	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C18A	220	Note 1	DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
B	220	Note 1	DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C19	.1 75		P288N-1	DF-104	CUB2P1	1DP-2-104	GEM-201	2TM-P1
C20	100 N750 10%		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C21	.047 75V		P288N-047	DD-503	CUB2S47	1DP-2-473	GEM-4147	2TM-S47
C22	.047 200V		P288N-047	DD-503	CUB2S47	1DP-2-473	GEM-4147	2TM-S47
C23	.47 100V		P288N-47		CUB2P47	2DP-5-474	GEM-2047	2TM-P47

\# Delco Part Number.
Note 1. Not used in Some Versions.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	DELCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	5meg	1/2	7275269					Tone, Note 1
B	5meg	1/2						Volume
C	2.5meg Switch					† QJ-1345A		Power Off-On
R2	175Ω * 58Ω Stop	2(WW)	1221422					Bias

† "Concentrikit" equivalent: K-8 kit with base elements and shafts: B12-341, P14-102 (Panel)
B18-141X, R1-118 (Rear)
S38 (Bushing)
76-1 (Switch)

Note 1: Split elements open at center of rotation, 500K low (CCW) end 4.5meg high (CW) end.
* Temperature Compensating.

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R3	2.2meg	
R4	10K	
R5	150K	
R6	47K	
R7	3.3meg	
R8	680K	
R9	1.5meg	
R10	3300Ω	
R11	150Ω	

ITEM No.	RATING	REMARKS
R12	3.3meg	
R13	1.5meg	
R14	1.5meg	
R15	680K	
R16	47K	
R17	1meg	
R18	15Ω	
R19	18Ω	
R20	10Ω	

ITEM No.	RATING	REMARKS
R21	.47Ω	#7270608
R22	56Ω	
R23	4.7meg	
R24	1meg	
R25	3.9meg	
R26	680K	
R27	27Ω	
R28	2.2meg	
R29	390Ω	(560Ω) *

Delco Part Number. Fuse Type.
* Alternate Value.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		DELCO PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	RF Choke	7255738	19-1004	19-1004	BC-565	4610		6.5uh
L2	Ant. Coil	1221138						
L3	RF Coil	1221138						
L4	RF Choke	7269684						1.8uh
L5	Osc. Coil	1221151						
L6	Input IF Trans.	1221257	16-6756	16-6756	BC-344	13-PH1		
L7	Output IF Trans.	1221253			BC-424			
L8	Hash Choke	1217846						1.4uh

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ∿)	DELCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L9	.740A	.7Ω	.011 HY	7274342				TC-2		

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	DELCO PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	4.4	1	1221425			TA-48			

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE	REPLACEMENT DATA							NOTES
	PRI.	DELCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	10Ω Tap @ 3-4Ω	1221428							

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	DELCO PART No.	QUAM PART No.	
SP1	6"x 9"	PM	3-4Ω	7272810	69A3	

MISCELLANEOUS

ITEM No.	PART NAME	DELCO PART No.	NOTES
M1	Tuner		(Complete) Series F2 (Wonder Bar Tuner)
M2	Spark Plate	7271564	
M3	Switch	7273705	Station Selector Bar
M4	Switch	7275325	Sensitivity Includes Station Selector Bar & 33K and 1800Ω resistors.
M5	Switch	7268030	Treadle Solenoid
M6	Switch	7268030	Power Solenoid
M7	Solenoid	1221161	Treadle
M8	Solenoid	1221160	Power
M9	Relay	7270545	Tuner Operating

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	578256	Tuning, Volume
Knob	575476	Tone
Knob	575477	Dummy
Pushbutton Ass'y.	1221470	Includes Front Bearing Plate & Slides
Pushbutton	7275157	Individual
Treadle Bar	7270014	
Pointer Ass'y.	1221067	

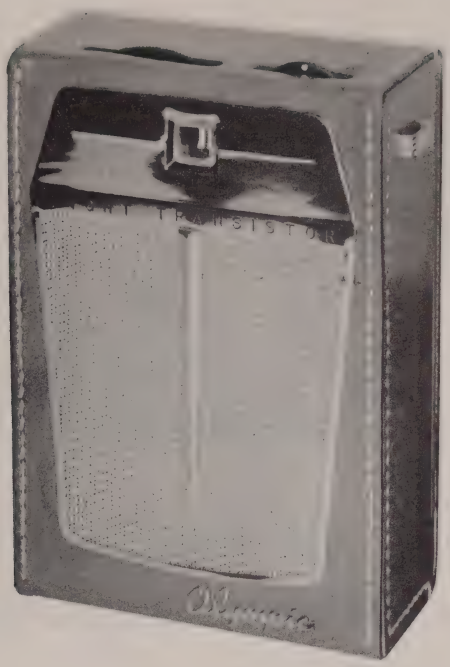
WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire .....Use BELDEN No. 8885
Bonding Strap .....Use BELDEN No. 8661

PHOTOFACT® Folder with CIRCUITRACE®

**OLYMPIC
MODEL 859**

OLYMPIC
MODEL 859



OLYMPIC
MODEL 859

TRADE NAME	Olympic Model 859		
MANUFACTURER	Olympic, A Div. of the Siegler Corp., 34-01 38th Ave., Long Island City 1, N. Y.		
TYPE SET	Battery Operated Transistorized Portable AM Receiver		
POWER SUPPLY	6 Volts DC	RATING	10MA@6 Volts DC (No Signal, Min. Volume)
TUNING RANGE—BROADCAST	520 - 1650KC		16MA@6 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools: A1, A2, A3..... GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291
WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538
A4, A6..... GENERAL CEMENT #8607, 9291, 9294
WALSCO #2520, 2522, 2523, 2524, 2534, 2537

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Loop	455KC (400% Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.	"	1600KC	1600KC	"	A4	"
3.	"	600KC	600KC	"	A5	"
4.	"	1400KC	Tune to 1400KC signal.	"	A6	Adjust for maximum output while rocking tuning gang.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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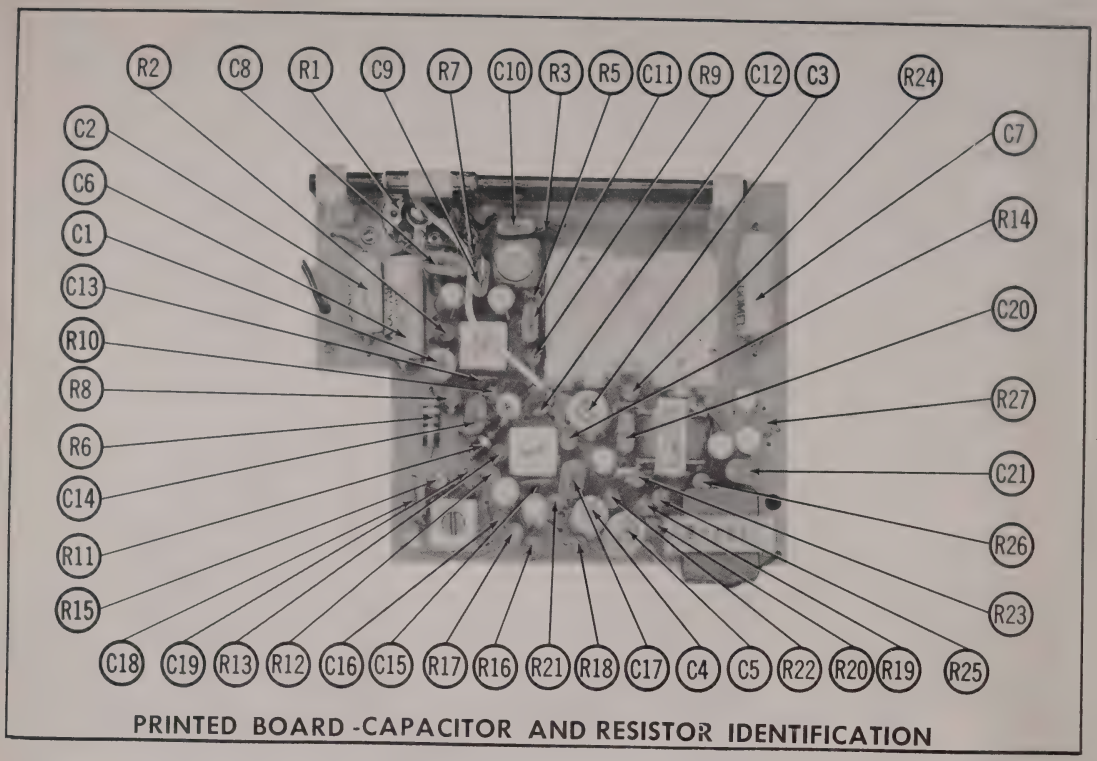
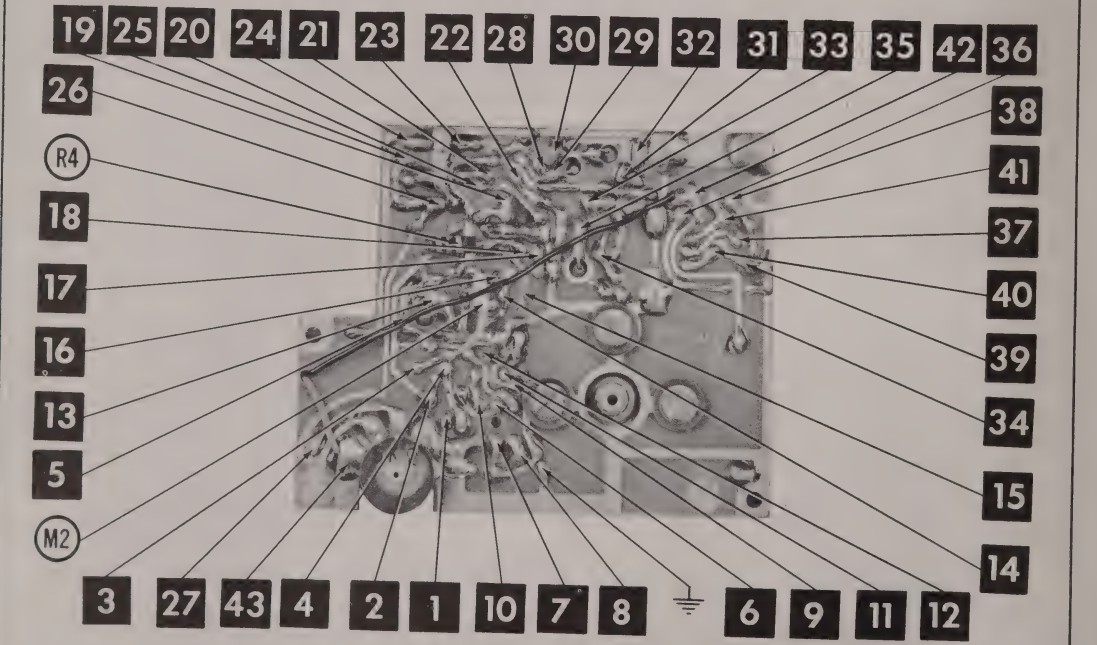
JF934

SET497 FOLDER 15



PRINTED BOARD -CAPACITOR AND RESISTOR IDENTIFICATION



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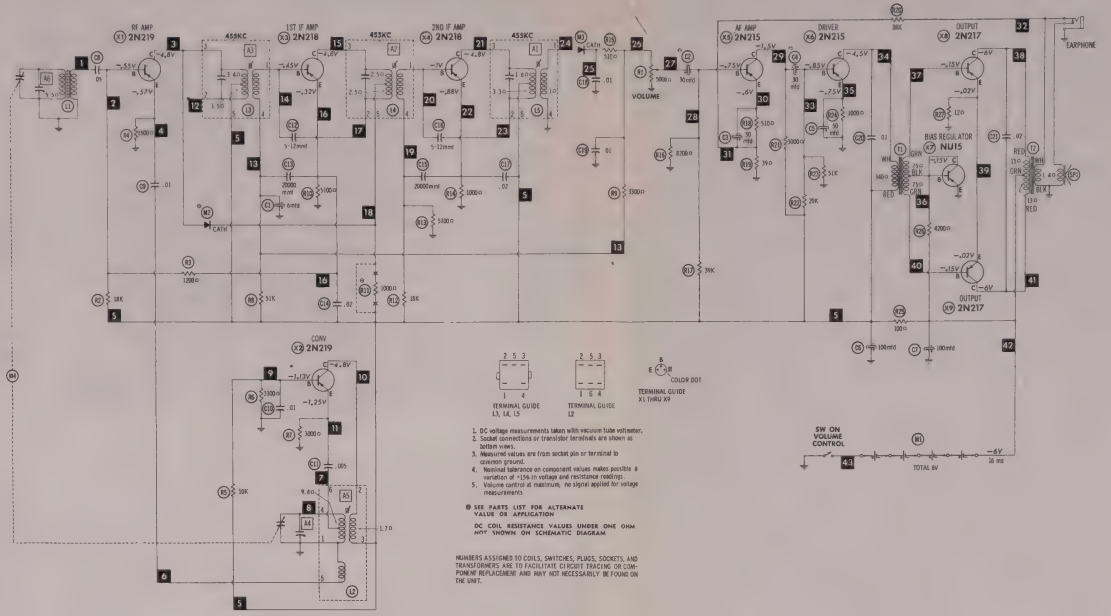
PRINTED BOARD



1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE
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OLYMPIC MODEL 859

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N219	RF Amplifier		2N219	2N487	2N219	PNP
X2	2N219	Converter		2N219	2N486	2N219	PNP
X3	2N218	1st IF Amplifier		2N218	2N483	2N218	PNP
X4	2N218	2nd IF Amplifier		2N218	2N483	2N218	PNP
X5	2N215	AF Amplifier		2N406	2N362	2N104	PNP
X6	2N215	Driver		2N406	2N362	2N104	PNP
X7	HV15	Bias Regulator			CK879		PNP
X8	2N217	Output		2N217	2N632	2N217	PNP) Matched
X9	2N217	Output		2N217	2N632	2N217	PNP) Pair

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	OLYMPIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	6	6	COJ30185	XPP-6006	NLW3-6	TT10X6	ML6-6	TE-1085	
C2	30	6		XPP-6030	NLW30-6	TT6X30	ML30-6	TE-1092	①
C3	50	6	COJ30186	XPP-6050	NLW50-6	TT6X50	ML50-6	TE-1100	
C4	30	6		XPP-6030	NLW30-6	TT6X30	ML30-6	TE-1092	①
C5	50	6	COJ30186	XPP-6050	NLW50-6	TT6X50	ML50-6	TE-1100	
C6	100	6	COJ30183	PWE6100	NLW100-6	PTT6100	ML100-6	TE-1102	
C7	100	6	COJ30183	PWE6100	NLW100-6	PTT6100	ML100-6	TE-1102	

① Some versions may use 12 volt unit in this application (Part #COJ30184).

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA						
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.	
C8	.05 50V			DDA-503	H-05S5		TA-150	TG-S50	
C9	.01 50V		V84C2S1	DDM-103	H-05S1	CCD-103	TA-110	TG-S10	
C10	.01 50V		V84C2S1	DDM-103	H-05S1	CCD-103	TA-110	TG-S10	
C11	.005 50V		V84C2D47	DDM-502	H-05D5	CCD-502	TA-250	TG-D50	
C12	5-12								
C13	20000		BPD-02	DDM-203	H-05S2	CCD-203	TA-120	TG-S20	
C14	.02 50V			DDM-203	H-05S2	CCD-203	TA-120	TG-S20	
C15	20000		BPD-02	DDM-203	H-05S2	CCD-203	TA-120	TG-S20	
C16	5-12								
C17	.02 50V			DDM-203	H-05S2	CCD-203	TA-120	TG-S20	
C18	.01 50V		V84C2S1	DDM-103	H-05S1	CCD-103	TA-110	TG-S10	
C19	.01 50V		V84C2S1	DDM-103	H-05S1	CCD-103	TA-110	TG-S10	
C20	.01 50V		V84C2S1	DDM-103	H-05S1	CCD-103	TA-110	TG-S10	
C21	.02 50V			DDM-203	H-05S5	CCD-203	TA-120	TG-S20	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	OLYMPIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A B	5000Ω Switch	1/4	PTJ30181	B16-214 Not Req.				Volume Power Off-On

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	18K	
R3	1200Ω	
R4	1500Ω	
R5	10K	
R6	3300Ω	
R7	3000Ω	
R8	51K	
R9	3300Ω	
R10	5100Ω	

ITEM No.	RATING	REMARKS
R11	1000Ω	
R12	18K	
R13	5100Ω	
R14	1000Ω	
R15	510Ω	
R16	8200Ω	
R17	39K	
R18	510Ω	
R19	39Ω	

ITEM No.	RATING	REMARKS
R20	24K	
R21	3000Ω	
R22	20K	
R23	51K	
R24	1000Ω	
R25	100Ω	
R26	4200Ω	
R27	12Ω	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		OLYMPIC PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick	LPJ30175						
L2	Osc. Coil	CLJ30172						
L3	1st IF Trans.	TRJ30178						
L4	2nd IF Trans.	TRJ30179						
L5	3rd IF Trans.	TRJ30180						

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	OLYMPIC PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1, 2	1	TRJ30176						

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	OLYMPIC PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	550Ω	14-16Ω	TRJ30177							

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	OLYMPIC PART No.	QUAM PART No.	
SP1	3½"	PM	14-16Ω	SKJ30171	3A05Z12	

BATTERIES

ITEM No.	VOLTAGE	OLYMPIC PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V	UM-3A *		Z *		1015 *		M-15R*	* 4 Required

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		OLYMPIC PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	SD-46 *		1N60	1N60	1N60	Overload & AVC (Pigtail)
M3	SD-46		1N60	1N60	1N60	Detector (Pigtail)

* Not used in some versions.

MISCELLANEOUS

ITEM No.	PART NAME	OLYMPIC PART No.	NOTES
M4	Tuning Cap.	CVJ30170	2 Gang

CABINETS & CABINET PARTS

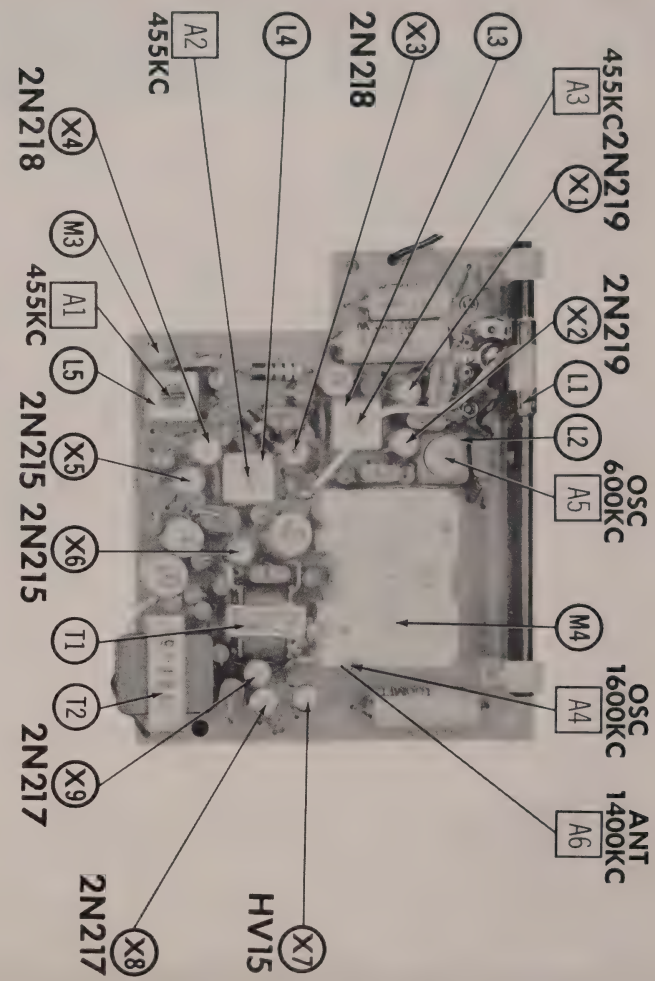
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	KNJ30173	Tuning
Knob	KNJ30182	Volume
Case	CAJ30169	

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

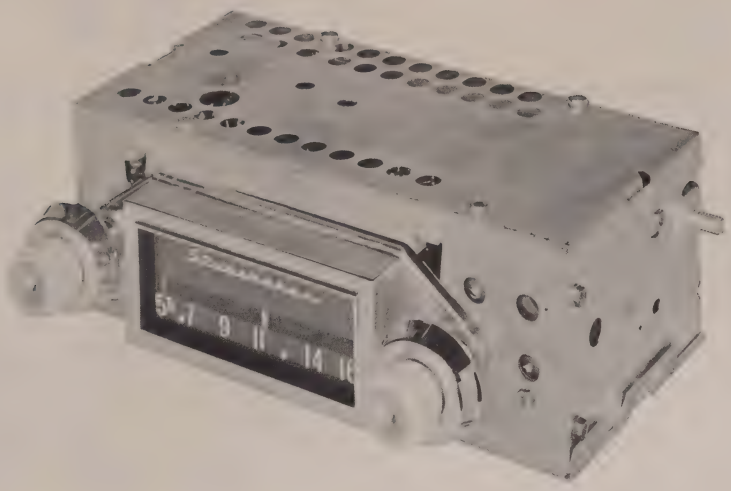
CHASSIS—TOP VIEW



PHOTOFACT® Folder with CIRCUITRACE®

STUDEBAKER
MODEL AC-2977

STUDEBAKER
MODEL AC-2977



TRADE NAME	Studebaker Model AC-2977 (For 1960 Studebaker Automobiles)
MANUFACTURER	Delco Radio Div., G. M. Corp., Kokomo, Indiana
TYPE SET	Battery Operated 4 Tube, 1 Transistor Custom Built Automobile AM Receiver
POWER SUPPLY	12 Volt Storage Battery RATING 1.8 Amp. @ 12.6 Volts DC
TUNING RANGE	BROADCAST 535 - 1615KC

ALIGNMENT INSTRUCTIONS

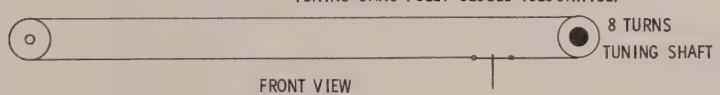
ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1 thru A4 ..... GENERAL CEMENT #9440
A5, A9, A10 ..... GENERAL CEMENT #8282, 8606, 8606-L, 9091
WALSCO #2526, 2541, 2542, 2543, 2544
A6, A7, A8 ..... GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of Converter. Low side to chassis.	262KC (400~ Mod.)	High frequency end stop	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
	Check setting of Oscillator core (A5). Rear of core should be 1 5/8" from mounting end of coil form.					
2.	High side thru 82mmf to antenna receptacle. Low side to chassis.	1615KC	High frequency end stop	Across voice coil	A6, A7, A8	Adjust for maximum output.
3.	"	600KC	600KC signal	"	A9, A10	"
4.	"	1615KC	1615KC signal	"	A7, A8	"
5.	With radio installed in car and antenna fully extended, tune in a weak station near 900KC and adjust A8 for maximum output.					

DIAL CORD STRINGING



HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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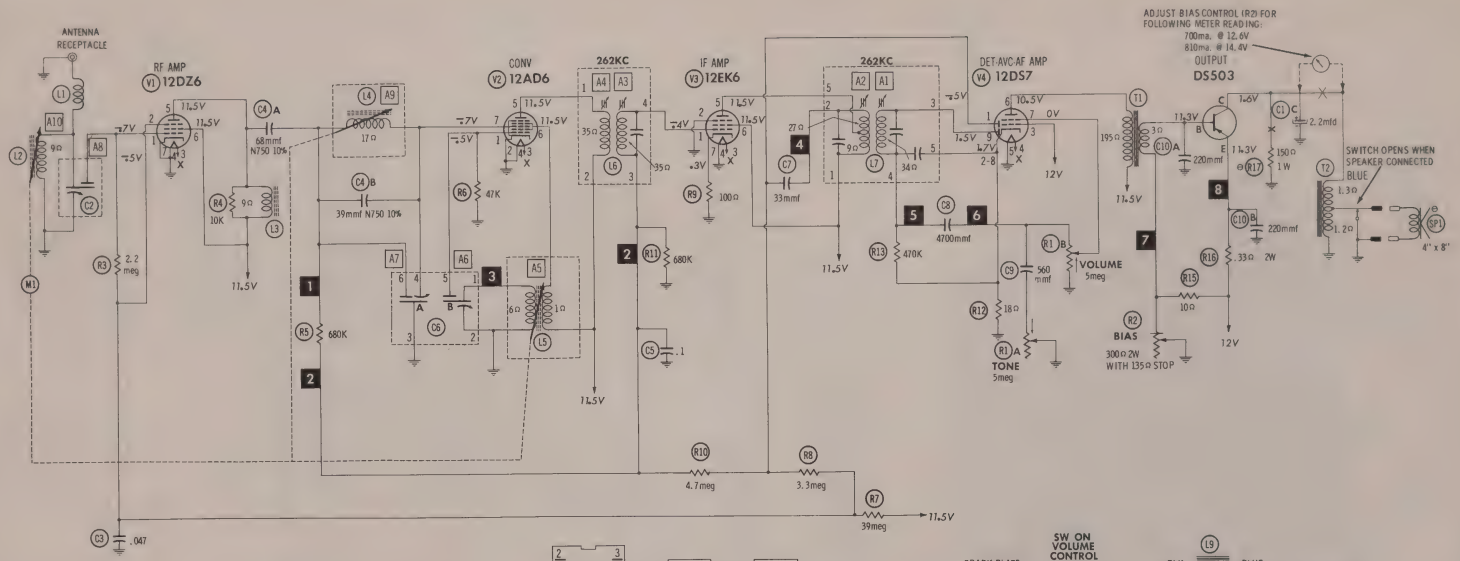
KD079

SET 497 FOLDER 16



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12DZ6	10.8meg	8.6meg	.1Ω	0Ω	65Ω	56Ω	0Ω		
V2	12AD6	47K	0Ω	.1Ω	0Ω	90Ω	57Ω	140K		
V3	12EK6	680K	0Ω	.1Ω	0Ω	66Ω	56Ω	100Ω		
V4	12DS7	5.3meg	18Ω	.8Ω	.1Ω	0Ω	250Ω	0Ω	18Ω	470K

TRANSISTOR CIRCUIT RESISTANCE FOR X1 NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±5% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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STUDEBAKER MODEL AC-2977

PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆		GENERAL ELECTRIC ◆		RAYTHEON ◆		SYLVANIA ◆	
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE		
V1	RF Amplifier	12DZ6	V3	IF Amplifier	12EK6		
V2	Converter	12AD6	V4	Det. - AVC - AF Amp.	12DS7		

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	DS-503	Output	2N235A				PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	DELCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	■ 850	16	7273730	AFH3-54-30		WP300.6		TVLS-3201 *	
B	▲ 400	16							
C	2.2	11.5							

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2		#7275120						
C3	.047 75V		P288N-047	DD-503	CUB2S47	1DP-2-473	GEM-4147	2TM-S47
C4A	68 N750 10%		N750-DI 68	DTN-68	C10Q68U	CCTN-680	CN7-468	10TCU-Q68
B	39 N750 10%			TCN-39	C10Q39U	CCTN-390	CN7-439	10TCU-Q39
C5	.1 75V		P288N-1	DF-104	CUB2P1	1DP-2-104	GEM-201	2TM-P1
C6A		#7273697						
B								
C7	33		DI-33	DD-330	L10Q33	CCD-330		10TS-Q33
C8	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C9	560		DI-560	DD-561	L10T56	CCD-561	B-356	10TS-T56
C10A	220		DI-220	DD-221	L10T22	CCD-221	B-322	10TS-T22
B	220		DI-220	DD-221	L10T22	CCD-221	B-322	10TS-T22
C11	.47 200V		P288N-47		CUB2P47	2DP-5-474	GEM-2047	2TM-P47

\# Delco Part Number.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	DELCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	5meg	½	7276142					Tone
B	5meg	½						Volume
C	Switch							Power Off-On
R2A	300Ω	2(WW)	7275474					Bias
B	135Ω Stop							

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R3	2.2meg	
R4	10K	
R5	680K	
R6	47K	
R7	39meg	

ITEM No.	RATING	REMARKS
R8	3.3meg	
R9	100Ω	
R10	4.7meg	
R11	680K	
R12	18Ω	

ITEM No.	RATING	REMARKS
R13	470K	
R14	56Ω	
R15	10Ω	
R16	.33Ω 2W	#7274329
R17	150Ω 1W	Note 1

\# Delco Part Number. Fuse Type.

Note 1. Not used in some versions.

PRINTED BOARD

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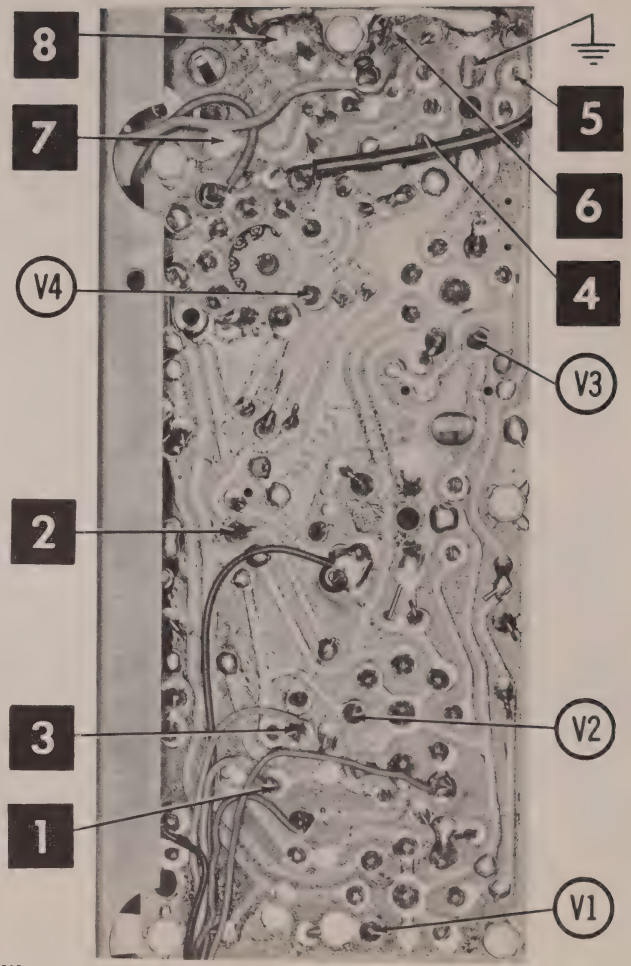
ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		DELCO PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	RF Choke	7255738	19-1004	19-1004	BC-565	4610		6.5uh
L2	Ant. Coil	1221138						
L3	RF Coil	1221138						
L4	RF Coil	7269684						1.8MH
L5	Osc. Coil	1221263						
L6	Input IF Trans.	1221257	16-6756	16-6756	BC-344 BC-424	13-PH1		
L7	Output IF Trans.	1221255						
L8	Hash Choke	1217846						1.4uh

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ~)	DELCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L9	.720A	.7Ω	.011 Hy.	7274342				TC-2		

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	DELCO PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	4.4	1	1221425			TA-48			

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE	REPLACEMENT DATA							NOTES
	PRI.	DELCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	15Ω Tap @ 3-4Ω	1221431				TA-50			

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	DELCO PART No.	QUAM PART No.	
SP1	4" x 8"	PM	3-4Ω	7275979 *	48A2Z4	* Alternate Part #6117

MISCELLANEOUS

ITEM No.	PART NAME	DELCO PART No.	NOTES
M1	Tuner		
M2	Spark Plate	7271769	Manual

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	7271845	Tuning & Volume
Knob	7271847	Tone
Knob	569555	Dummy
Pointer Assembly	7272125	

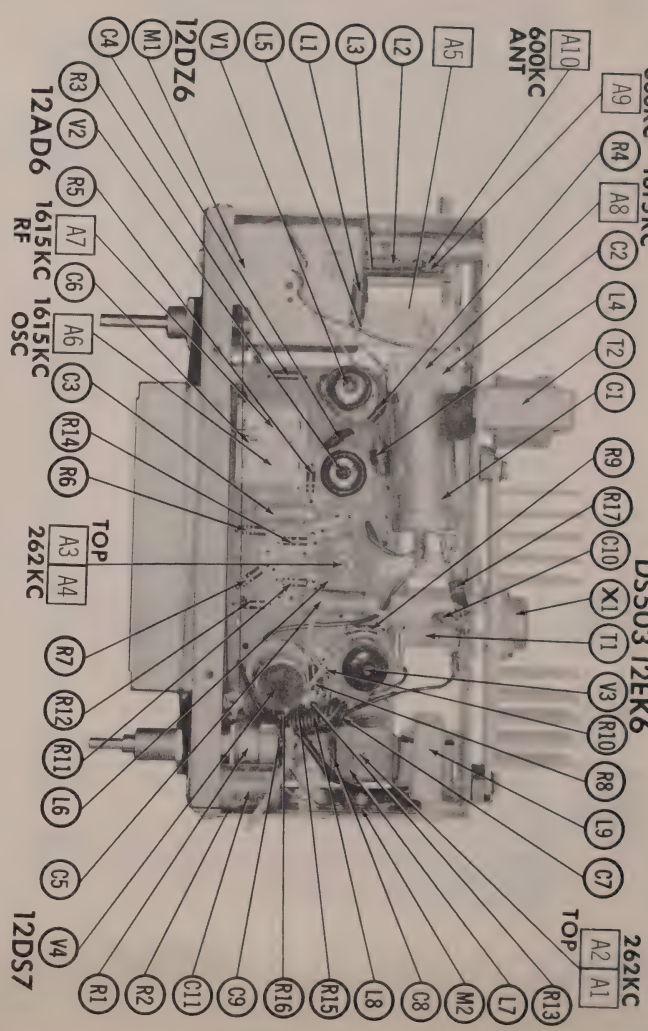
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Shielded Hook-up Wire ..... Use BELDEN No. 8885

Bonding Strap ..... Use BELDEN No. 8661

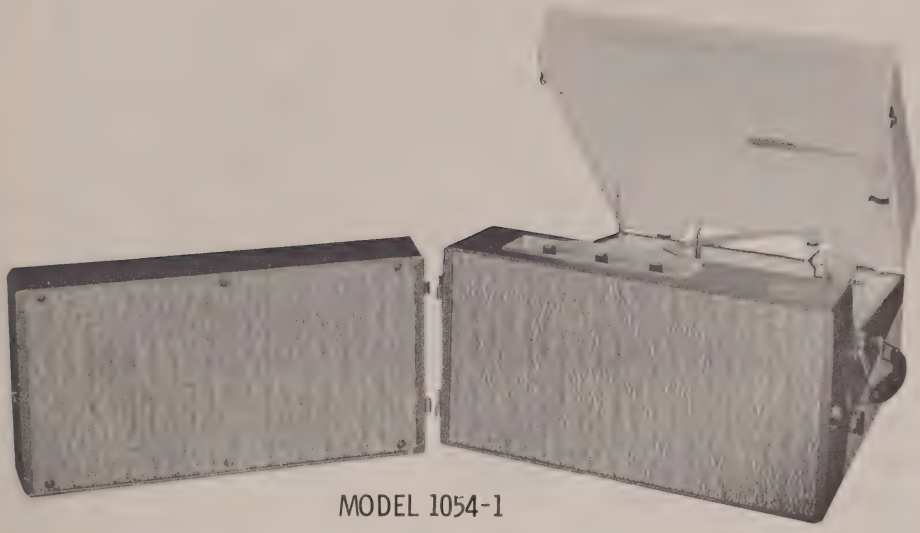
CHASSIS—TOP VIEW



PHOTOFACT® Folder with CIRCUITRACE®

WEBCOR MODELS 1054-1, 1070-1 (Ch. 14X319)

WEBCOR MODELS 1054-1, 1070-1 (Ch. 14X319)



MODEL 1054-1

WEBCOR MODELS 1054-1, 1070-1 (Ch. 14X319)

TRADE NAME	Webcor Models EP-1054-1, TP-1054-1, EP-1070-1, TP-1070-1 (Ch. 14X319)
MANUFACTURER	Webcor, Inc., 5610 W. Bloomingdale Ave., Chicago 39, Illinois
TYPE SET	AC Operated 3 Tube Stereo Phono Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	105 - 120 Volts AC, 60 Cycles RATING 33 Watts, .35 Amp. @117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER — SEE WEBCOR 184 — PHOTOFACT SET 447 FOLDER 13

SET 497 FOLDER 17

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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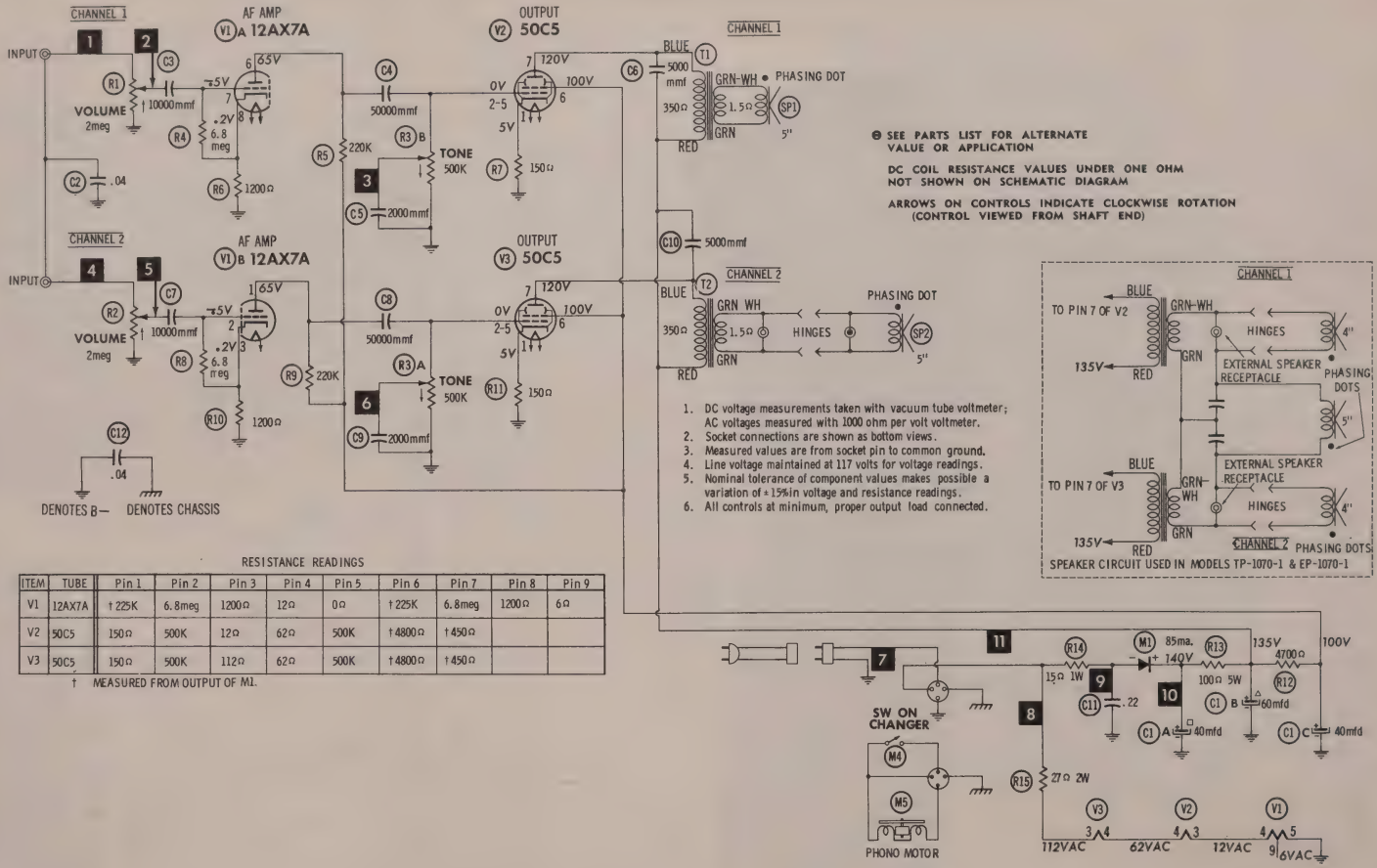
JT880



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7A	†225K	6.8meg	1200Ω	12Ω	0Ω	†225K	6.8meg	1200Ω	6Ω
V2	50C5	150Ω	500K	12Ω	62Ω	500K	†4800Ω	†450Ω		
V3	50C5	150Ω	500K	112Ω	62Ω	500K	†4800Ω	†450Ω		

† MEASURED FROM OUTPUT OF M1.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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WEBCOR MODELS 1054-1, 1070-1 (Ch. 14X319)

PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆	GENERAL ELECTRIC ◆	RAYTHEON ◆	SYLVANIA ◆

ITEM No.	USE	TYPE
V1	Channel 1 AF Amp. - Channel 2 AF Amp.	12AX7A

ITEM No.	USE	TYPE
V2	Channel 1 Output	50C5
V3	Channel 2 Output	50C5

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA WEBCOR PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	40	150	30P367	PWH3-11-30	C0090 ‡	PFP311.63		PCL-3441.2	
B	60	150							
C	40	150							

‡ Use printed circuit adaptors #55277 & 55278.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.04 400V		P488N-04	DD-403	CUB6S4	6DP-3-403	GEM-414	4TM-S4
C3	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C4	50000		BPD-05	DD-503	CUB6S5	6DP-3-503	GP150	5HK-S50
C5	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C6	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C7	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C8	50000		BPD-05	DD-503	CUB6S5	6DP-3-503	GP150	5HK-S50
C9	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C10	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D20
C11	.22 400V		P4151W-22		BC6P22J	4DP-5-224	ACE-6022	4SE-P22
C12	.04 400V		P488N-04	DD-403	CUB6S4	6DP-3-403	GEM-414	4TM-S4

CONTROLS

ITEM No.	RATING RESIST-ANCE	RATING WATTS	REPLACEMENT DATA WEBCOR PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	2meg		31P138					Volume, Channel 1
R2	2meg		31P138					Volume, Channel 2
R3A	500K		31P165					Tone, Channel 2
B	500K							Tone, Channel 1

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R4	6.8meg	
R5	220K	
R6	1200Ω	
R7	150Ω	

ITEM No.	RATING	REMARKS
R8	6.8meg	
R9	220K	
R10	1200Ω	
R11	150Ω	

ITEM No.	RATING	REMARKS
R12	4700Ω	
R13	100Ω 5W	#29P088
R14	15Ω 1W	
R15	27Ω 2W	

Webcor Part Number.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA WEBCOR PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	1800Ω	3-4Ω	76P081-1	24S50	A-2928	AU-603	A-3876	24S50	S-2X	
T2	1800Ω	3-4Ω	76P081-1	24S50	A-2928	AU-603	A-3876	24S50	S-2X	

PRINTED BOARD

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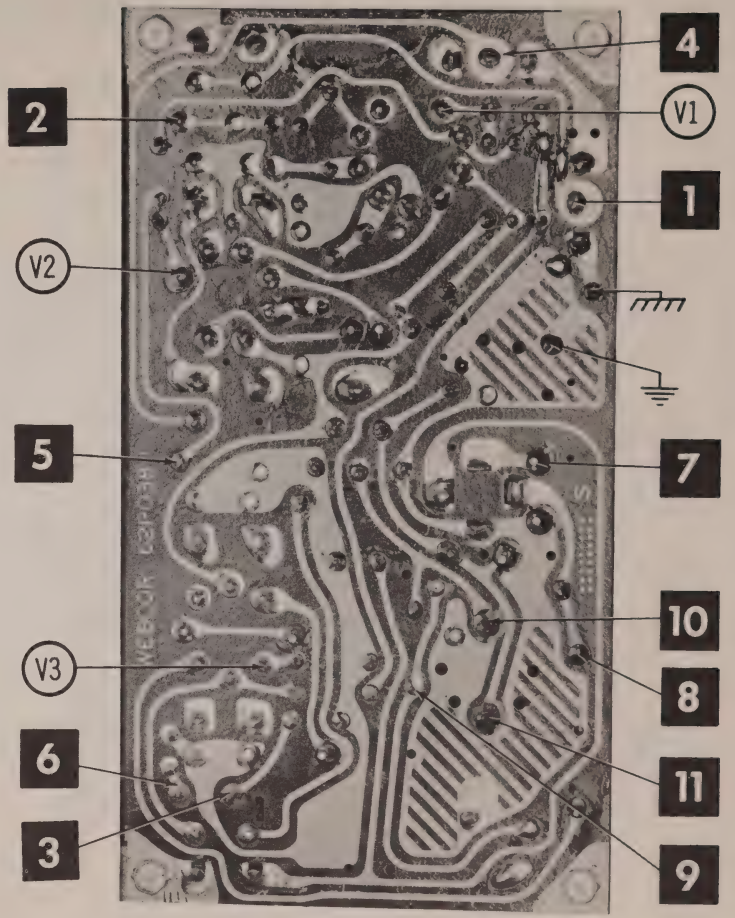
ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	WEBCOR PART No.	QUAM PART No.	
SP1	5"	PM	6-8Ω	76P097 *	5A1Z8	* Models TP-1054-1, EP-1054-1
SP2	5"	PM	6-8Ω	76P097 *	5A1Z8	♦ Models TP-1070-1, EP-1070-1
	5"	PM		76P095 ♦		
	4"	PM		76P096 ♦		

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					
	CURRENT (Measured)	WEBCOR PART No.	INTERNATIONAL PART No.	ITT PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.085A	65P155 *	2E4 *	RE504 *	K200 *	SR200 *	* Silicon

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA							
	WEBCOR PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		JENSEN PART No.		SONOTONE PART No.	
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE
M2	21P586	13T		13		A-44X		10T2B-S	

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	WEBCOR PART No.	CLEVITE WALCO PART No.	JENSEN PART No.	
M3	(Part of M2)	* W-204DS † ♦ or * W-204DD-1 ♦	* A-44X † or * A-44XSD † ♦ or * A-44XDD ♦	† Jewel ♦ Diamond * Includes Cartridge

MISCELLANEOUS

ITEM No.	PART NAME	WEBCOR PART No.	NOTES
M4	Switch	32P133	Off-On, Part of Changer
M5	Motor		Phono Drive

CABINETS & CABINET PARTS

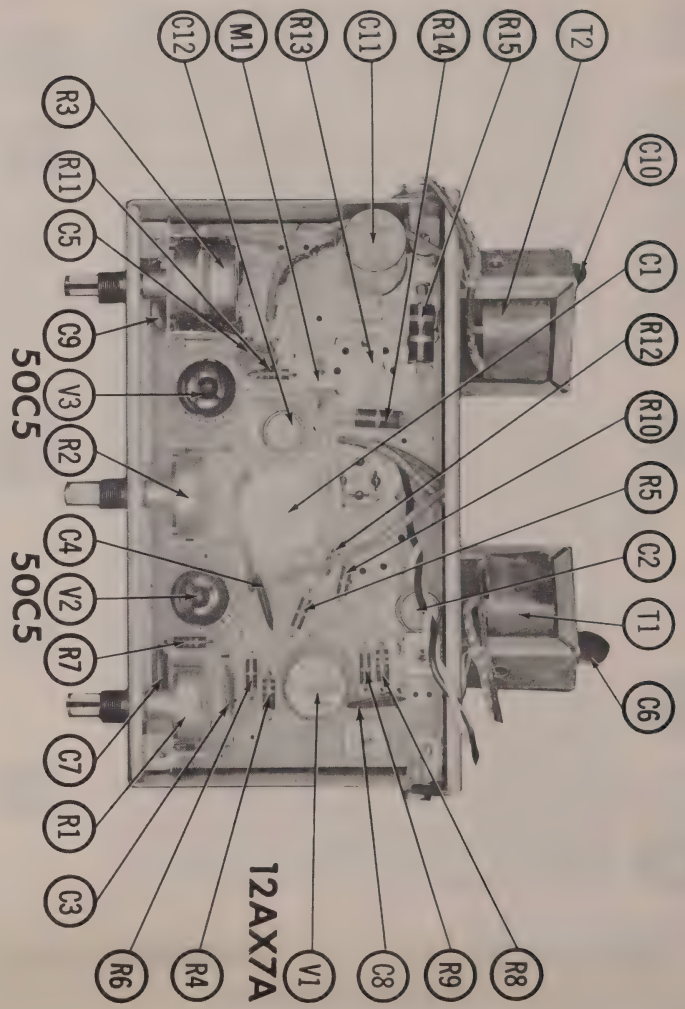
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	39P213-6	Volume, Tone
Cabinet	92X116-1	Ebony, Model EP-1054-1
Cabinet	92X112-1	Ebony, Model EP-1070-1
Cabinet	92X116-2	Brown, Model TP-1054-1
Cabinet	92X112-2	Brown, Model TP-1070-1
Cabinet	11X2319-1	Speaker (Ebony), Model EP-1054-1
Cabinet	11X2289-1	Left Channel Speaker (Ebony), Model EP-1070-1
Cabinet	11X2288-1	Right Channel Speaker (Ebony), Model EP-1070-1
Cabinet	11X2319-2	Speaker (Brown), Model TP-1054-1
Cabinet	11X2289-2	Left Channel Speaker (Brown), Model TP-1070-1
Cabinet	11X2288-2	Right Channel Speaker (Brown), Model TP-1070-1
Handle	39P238	Cabinet, Models TP-1054-1, EP-1054-1
Handle	39P238-3	Cabinet, Ebony, Model EP-1070-1
Handle	39P238-2	Cabinet, Brown, Model TP-1070-1

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

CHASSIS—TOP VIEW



PHOTOFACT® Folder with CIRCUITRACE®

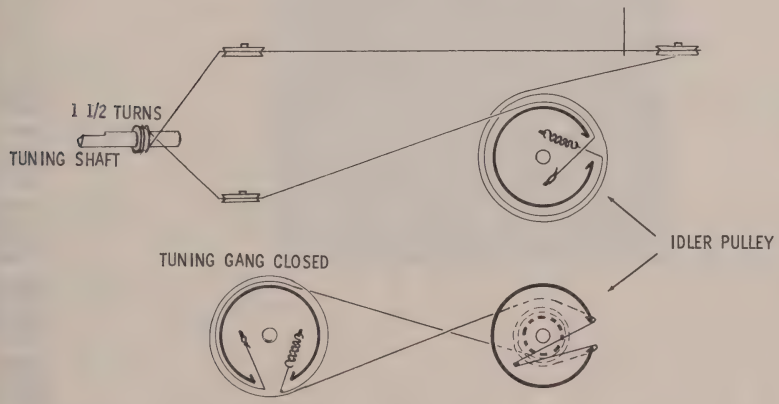
WESTINGHOUSE MODELS H-712P9, H-713P9 (CH. V-2399-1, V-2399-3)

WESTINGHOUSE MODELS H-712P9, H-713P9 (CH. V-2399-1, V-2399-3)

MODEL H-713P9

TRADE NAME	Westinghouse Models H-712P9, H-713P9 (Ch. V-2399-1, V-2399-3)		
MANUFACTURER	Westinghouse Electric Corp., Radio-TV Div., Metuchen, N. J.		
TYPE SET	Battery Operated Transistorized Portable BC-SW Receiver		
POWER SUPPLY	9 Volts DC	RATING	9MA @ 9 Volts DC (No Signal, Min. Volume) 17MA @ 9 Volts DC (Signal, Normal Volume)
TUNING RANGE	BROADCAST 530-1625KC	SHORT WAVE	2.4-6.5MC

DIAL CORD STRINGING



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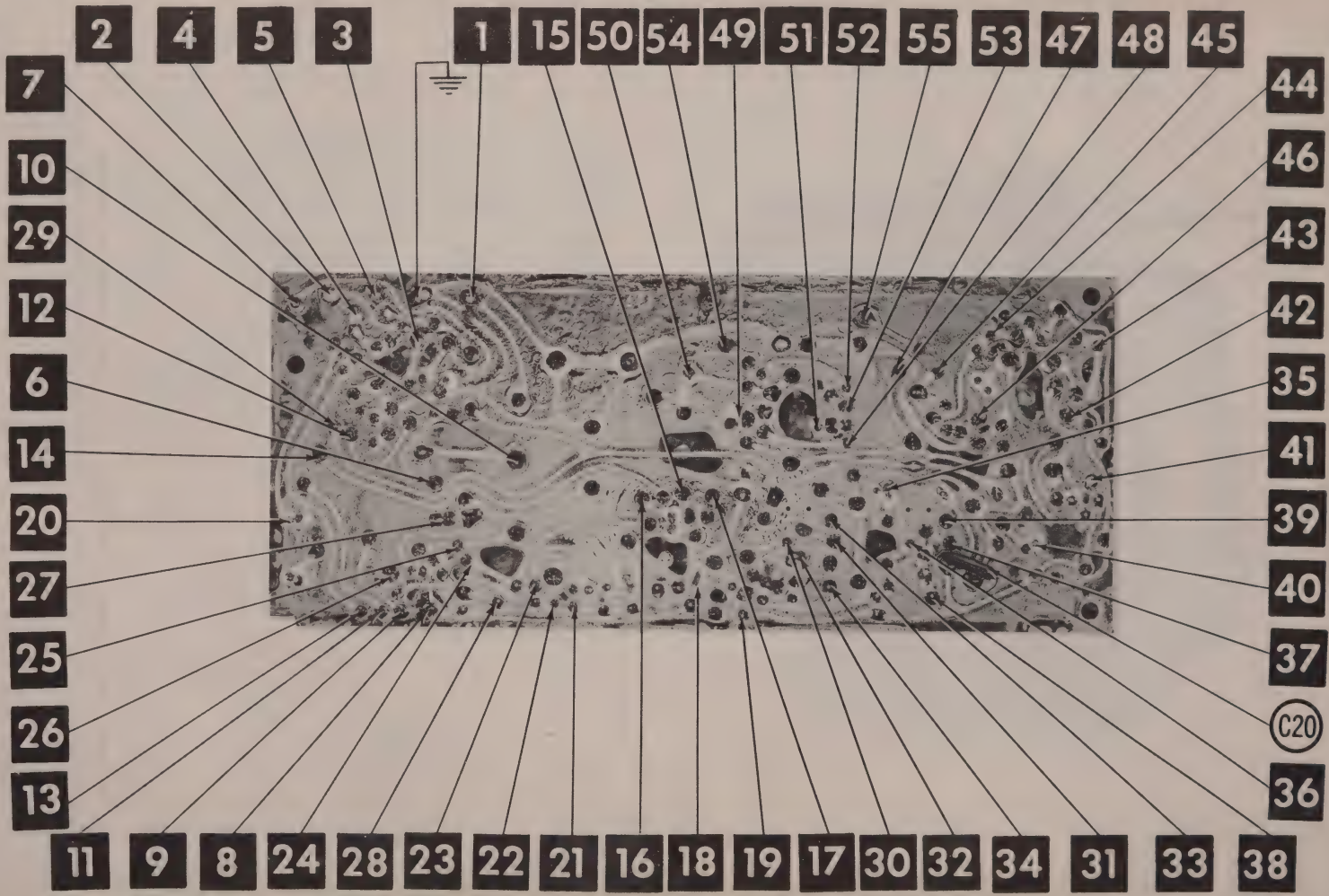
SET 497 FOLDER 18



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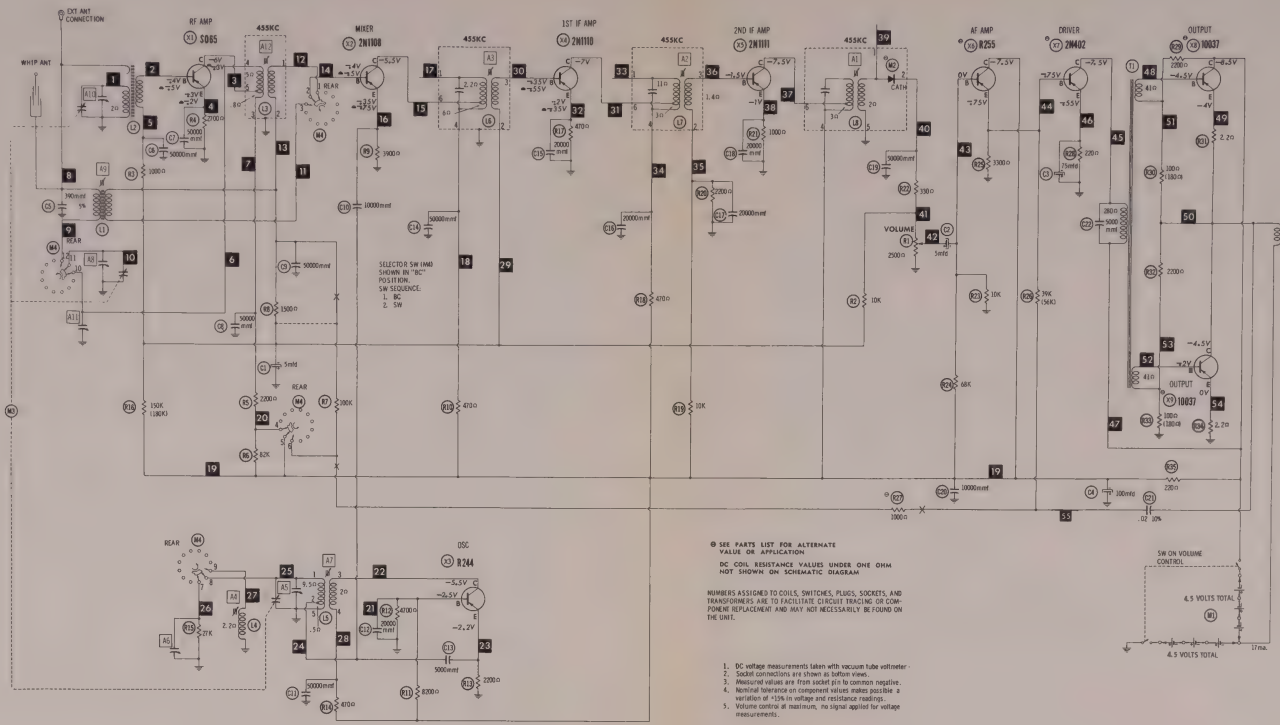

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

*RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.
ALL MEASUREMENTS TAKEN IN BC POSITION.
= MEASURED IN SW POSITION

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE®

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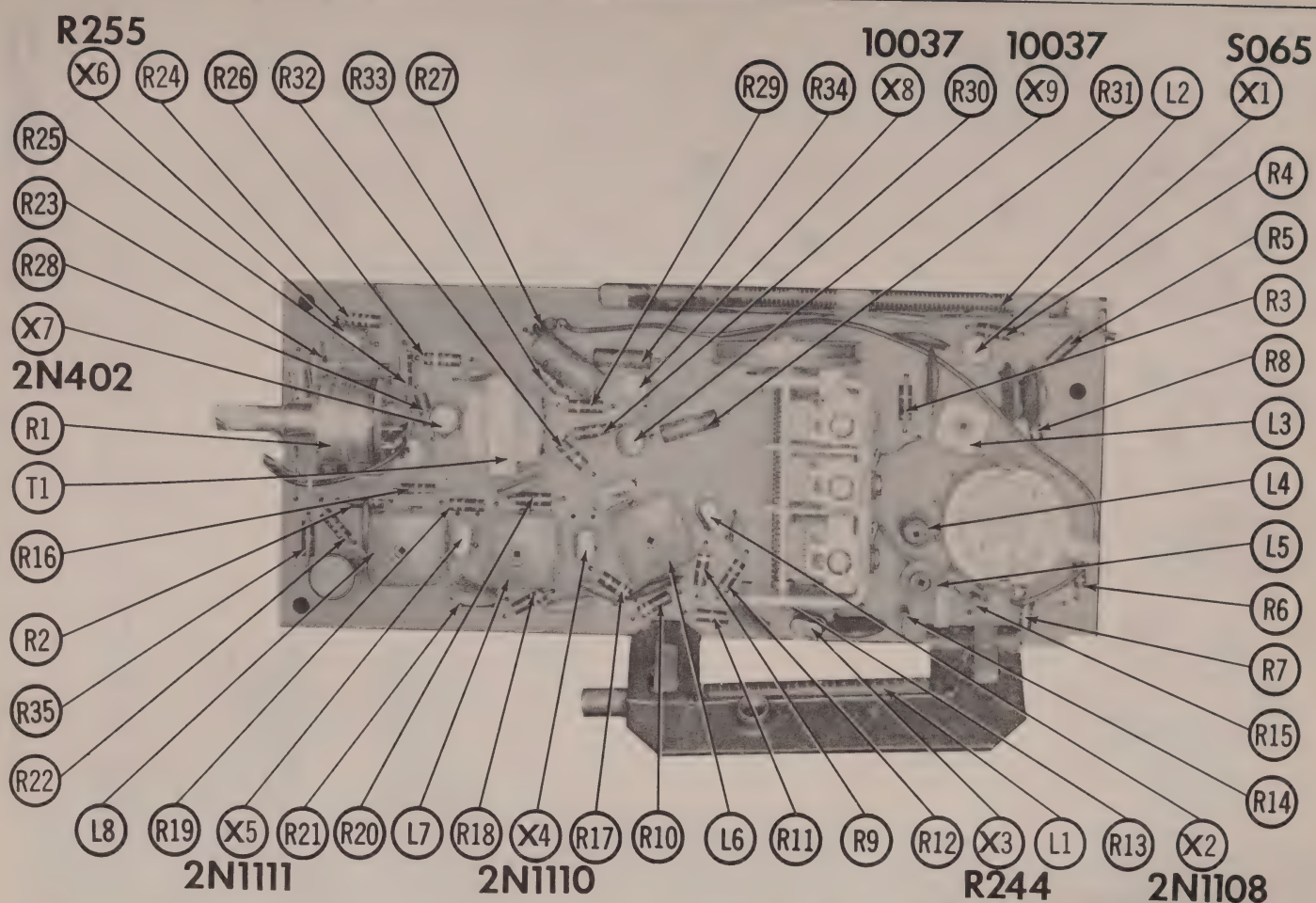
WESTINGHOUSE MODELS H-712P9, H-713P9 (CH. V-2399-1, V-2399-3)



CHASSIS TOP VIEW - RESISTOR, INDUCTOR & TRANSISTOR IDENT.

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.
Suggested Alignment Tools: A1, A2, A3, A4, A7, A12 ..... GENERAL CEMENT #9440
A5, A6, A8, A10, A11 ..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	High side thru .01mfd to Base of Mixer. Low side to chassis.	455KC (400~ Mod.)	(BC) Tuning gang fully open	Across speaker voice coil thru AC probe.	A1, A2, A3	Adjust for maximum deflection.
2.	"	6.5MC	(SW) Tuning gang fully open	"	A4	Rotate A5 fully clockwise then back off ½ turn. Adjust A4 for maximum deflection.
3.	"	7.41MC	"	"		Increase generator output until image signal is heard. If signal cannot be heard, oscillator is tuned to wrong side of incoming signal. Rotate A4 counterclockwise until image signal is heard.
4.	"	6.5MC	"	"	A5	Adjust for maximum deflection.
5.	"	2.4MC	Tuning gang fully closed	"		Retouch A4 for maximum deflection. Repeat steps 4 and 5.
6.	"	1625KC	(BC) Tuning gang fully open	"	A6	Adjust for maximum deflection.
7.	"	530KC	Tuning gang fully closed	"	A7	Adjust for maximum deflection. Repeat steps 6 and 7.
8.	External antenna connection thru 15mmf. Low side to chassis.	5.8MC	(SW) Tune to 5.8MC signal	"	A8	Adjust for maximum deflection.
9.	"	2.6MC	Tune to 2.6MC signal	"	A9	Adjust for maximum deflection. Repeat steps 8 and 9.
10.	External antenna connection thru 200mmf. Low side to chassis.	1400KC	(BC) Tune to 1400KC signal	"	A10, A11	Adjust for maximum deflection.
11.	"	600KC	Tune to 600KC signal	"	A12	"
12.	"	1400KC	Tune to 1400KC signal	"		Retouch A11 for maximum deflection.

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	S065	RF Amplifier					PNP
X2	2N1108	Mixer			2N485		PNP
X3	R-244	Oscillator			2N486	2N412	PNP
X4	2N1110	1st IF Amplifier			2N483	2N409	PNP
X5	2N1111	2nd IF Amplifier			2N483	2N409	PNP
X6	R-255 †	AF Amplifier		2N406	2N362		PNP
X7	2N402 *	Driver		2N406	2N362	2N217	PNP
X8	10037 ♦	Output		2N408	2N633		PNP } Matched
X9	10037 ♦	Output		2N408	2N633		PNP } Pair

† Type 2N1273 used in Chassis V-2399-3.
* Type #2N238 may be used in Chassis V-2399-1. Type 2N1274 used in Chassis V-2399-3.
♦ Types #10036, 10038, 10039 may be used in Chassis V-2399-1. Type 2N1273 used in Chassis V-2399-3.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	Westinghouse PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	5	3	218V012H19	PWE3005	EC5-6	TT6X5	ML5-6	TE-1052.2	
C2	5	3	218V012H19	PWE3005	EC5-6	TT6X5	ML5-6	TE-1052.2	
C3	75	3	218V012H17	PWE3100	EC75-6	MT6X80	ML75-3	TE-1059	
C4	100	10	218V012H20	BCD10010	ECPB417	PET1400	ML100-15	VL-1140	

FIXED CAPACITORS

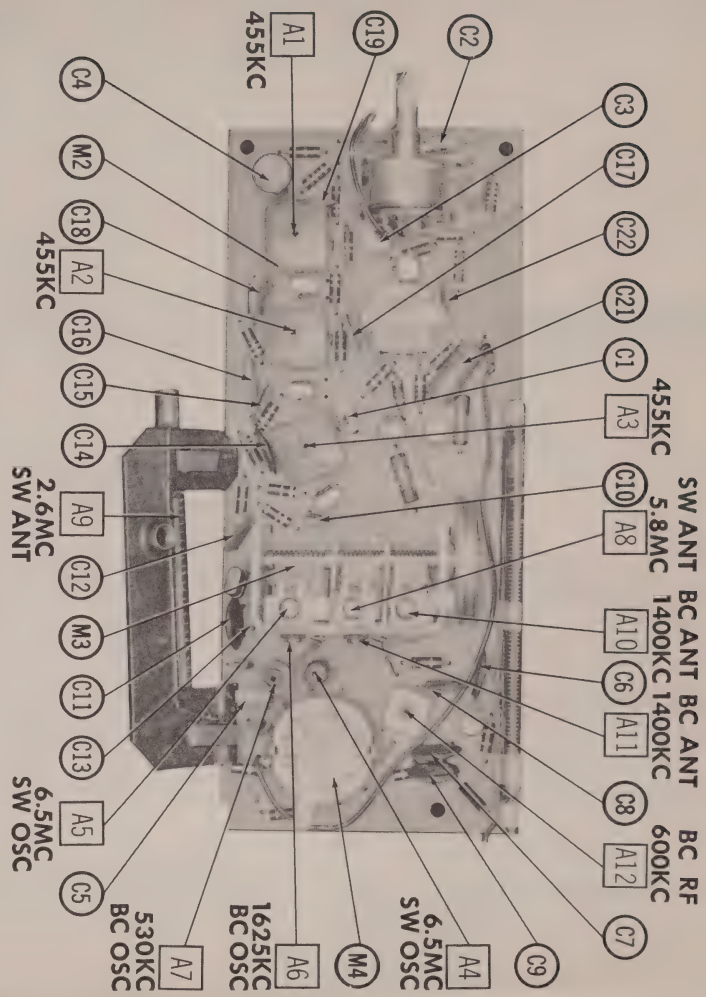
Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	390 5%		1469-00039		5R5T39	CM-19V-391J	MCE243	MS-339
C6	50000		BPD-05	DD-503	ST2S5	1DP-2-503	GP150	5HK-S50
C7	50000		BPD-05	DD-503	ST2S5	1DP-2-503	GP150	5HK-S50
C8	50000		BPD-05	DD-503	ST2S5	1DP-2-503	GP150	5HK-S50
C9	50000		BPD-05	DD-503	ST2S5	1DP-2-503	GP150	5HK-S50
C10	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C11	50000		BPD-05	DD-503	ST2S5	1DP-2-503	GP150	5HK-S50
C12	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C13	5000		BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C14	50000		BPD-05	DD-503	ST2S5	1DP-2-503	GP150	5HK-S50
C15	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C16	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C17	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C18	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C19	50000		BPD-05	DD-503	H-05S5	1DP-2-503	GP150	5HK-S50
C20	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C21	.02 200V 10%		V84C2S2-10%		PM2S2	4DP-2-203		2TM-S2
C22	5000		BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Westinghouse PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A B	2500Ω Switch	½	270V027H15					Volume Power Off-On

CHASSIS—TOP VIEW



WESTINGHOUSE MODELS H-712P9, H-713P9 (CH. V-2399-1, V-2399-3)

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	10K	
R3	1000Ω	
R4	2700Ω	
R5	2200Ω	
R6	82K	
R7	100K	
R8	1500Ω	
R9	3900Ω	
R10	470Ω	
R11	8200Ω	
R12	4700Ω	
R13	2200Ω	

ITEM No.	RATING	REMARKS
R14	470Ω	
R15	27K	
R16	150K	(180K) *
R17	470Ω	
R18	470Ω	
R19	10K	
R20	2200Ω	
R21	1000Ω	
R22	330Ω	
R23	10K	
R24	68K	
R25	3300Ω	

ITEM No.	RATING	REMARKS
R26	39K	(56K) †
R27	1000Ω	Note 1
R28	220Ω	
R29	2200Ω	
R30	100Ω	(180Ω) †
R31	2.2Ω	
R32	2200Ω	(180Ω) †
R33	100Ω	
R34	2.2Ω	
R35	220Ω	

* Alternate Value.
† Used in Chassis V-2399-3.
Note 1. Not used in Chassis V-2399-3.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: Westinghouse PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	SW Loopstick	310V053H01						
L2	BC Loopstick	310V052H02						
L3	BC RF Trans.	235V050H01						
L4	SW Osc. Coil	230V078H01						
L5	BC Osc. Coil	230V077H01						
L6	1st IF Trans.	235V051H02						
L7	2nd IF Trans.	235V051H01						
L8	3rd IF Trans.	235V052H01						

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO PRI.	TURNS RATIO SEC.	REPLACEMENT DATA: Westinghouse PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordorson PART No.	Triad PART No.	NOTES
T1	3	1 SEC.2 1	430V076H01						

SPEAKER

ITEM No.	TYPE: SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: Westinghouse PART No.	QUAM PART No.	NOTES
SP1	4"	PM	26-28Ω	570V065H01	4A1Z27	

BATTERIES

ITEM No.	VOLTAGE	Westinghouse PART No.	REPLACEMENT DATA: BURGESS "A"	BURGESS "B"	EVEREADY "A"	EVEREADY "B"	MALLORY "A"	MALLORY "B"	NOTES
M1	1.5V	*		230 *		A100 *		M-13R *	* 6 Required

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA: Westinghouse PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
M2		296V002H01 *	1N295	1N295	1N295	Detector (Pigtail)

* Type #1N295 or 1N87A may be used.

MISCELLANEOUS

ITEM No.	PART NAME	Westinghouse PART No.	NOTES
M3	Tuning Cap.	330V028H01	3 Gang
M4	Switch	756V038H01	Band Selector
	Antenna	318V005H01	Telescoping

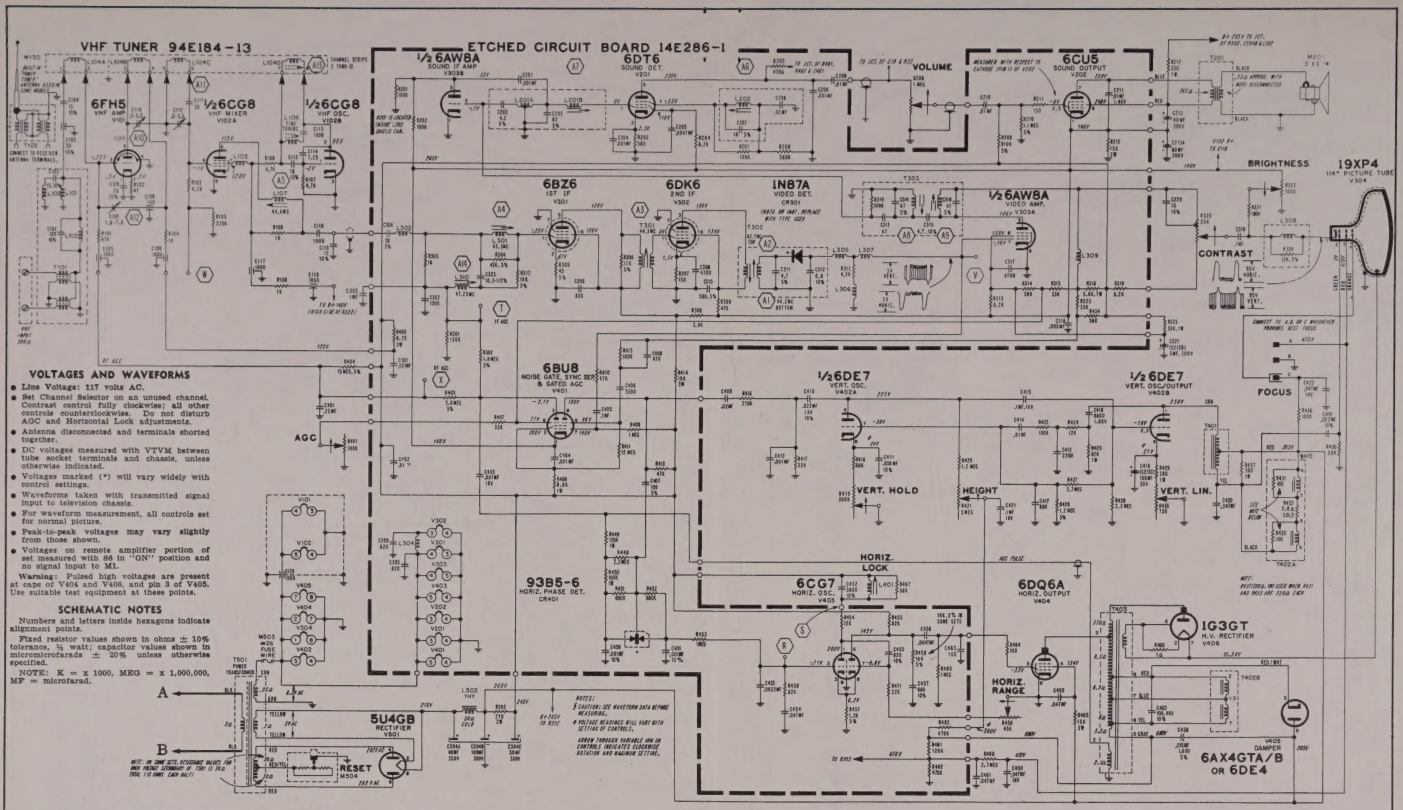
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	550V096H05	Tuning
Knob	550V096H04	Volume
Knob	550V115H01	Band Selector
Dial Pointer	558V232H01	
Cabinet Front Ass'y	513V047H01	
Cabinet Back Ass'y	513V050H02	Model H-713P9
Cabinet Back Ass'y	513V050H01	Model H-712P9

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors



VOLTAGES AND WAVEFORMS

- **Line Voltage: 117 volts AC.**
- Set Channel Selector on an unused channel. Contrast control fully clockwise; all other controls counterclockwise. Do not disturb AGC and Horizontal Lock adjustments.
- Antenna disconnected and terminals shorted together.
- DC voltages measured with VTVM between tube socket terminals and chassis, unless otherwise indicated.
- Voltages marked (*) will vary widely with control settings.
- Waveforms taken with transmitted signal input to television chassis.
- For waveform measurement, all controls set for normal picture.
- Peak-to-peak voltages may vary slightly from those shown.
- Voltages on remote amplifier portion of set measured with S6 in "ON" position and no signal input to M1.

Warning: Fused high voltages are present at cap of V404 and V406, and pin 3 of V405. Use suitable test equipment at these points.

SCHEMATIC NOTES

Numbers and letters inside hexagons indicate alignment points.

Fixed resistor values shown in ohms ± 10% tolerance, ½ watt; capacitor values shown in micromicrofarads ± 20% unless otherwise specified.

NOTE: K = x 1000, MEG = x 1,000,000, MF = microfarad.

ADMIRAL MODELS C19J122, B, C19J123, B, C19J139, B, C19UJ122, C19UJ123, C19UJ139, P19J150, B, P19J151, B, P19J155, B, P19UJ150, P19UJ151, P19UJ155, PS19J160, PS19J162, PS19J163, PS19J171, PS19J179 (CH. 7E2, 15E1, B, 15F1, 15UE1)

Schematic Diagram Courtesy of Admiral Corporation

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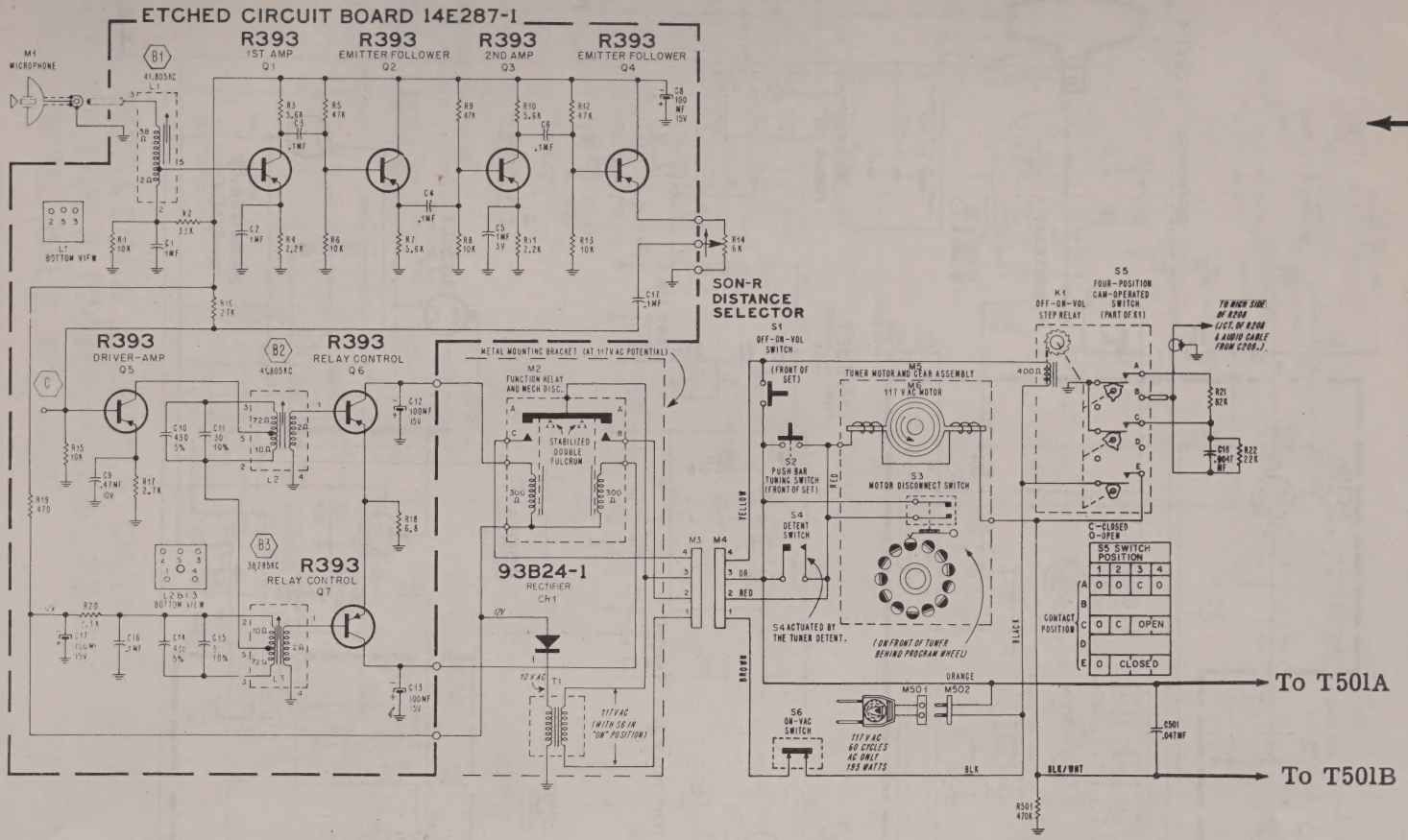
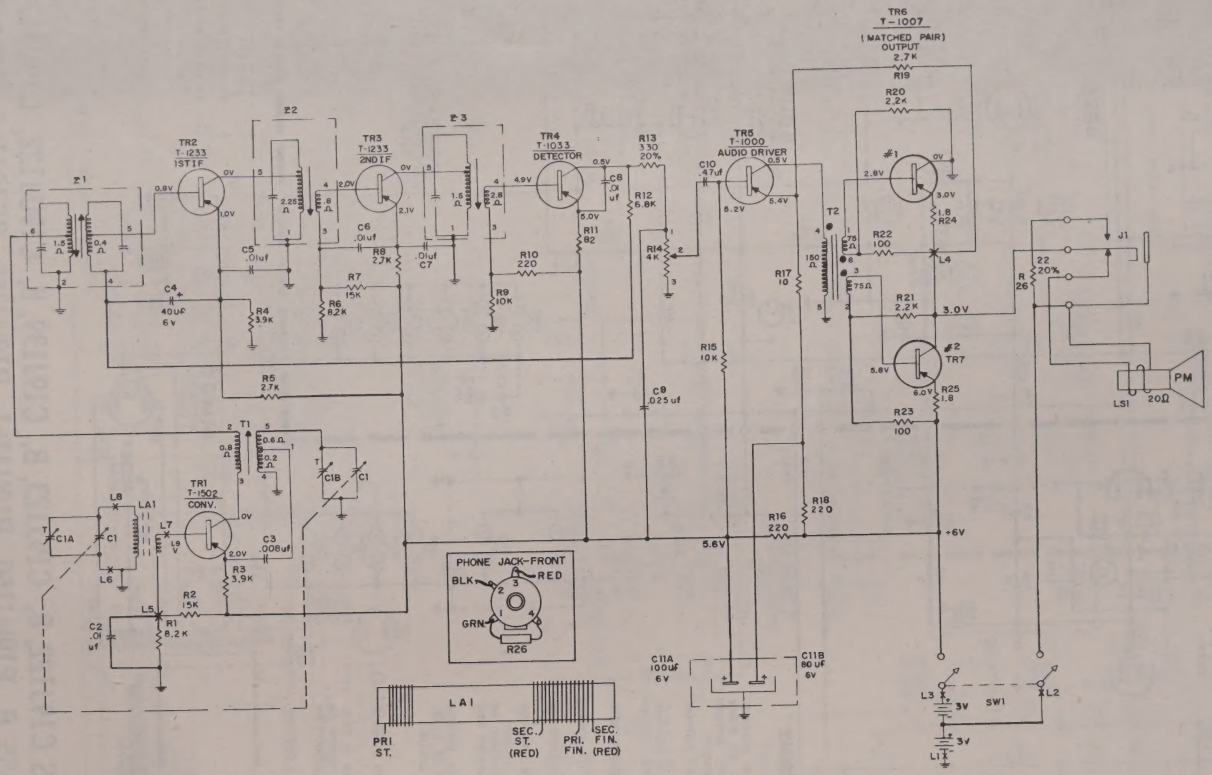

ETCHED CIRCUIT BOARD 14E287-1
R393 1ST AMP Q1
R393 EMITTER FOLLOWER Q2
R393 2ND AMP Q3
R393 EMITTER FOLLOWER Q4
R393 DRIVER-AMP Q5
R393 RELAY CONTROL Q6
R393 RELAY CONTROL Q7
SON-R DISTANCE SELECTOR
METAL MOUNTING BRACKET (AT 117 V AC POTENTIAL)
FUNCTION RELAY AND MECH DISC.
STABILIZED DOUBLE FULCRUM
93B24-1 RECTIFIER CR1
S1 OFF-ON-VOL SWITCH
S2 PUSH BAR TUNING SWITCH (FRONT OF SET)
S3 MOTOR DISCONNECT SWITCH
S4 DETENT SWITCH
S4 ACTUATED BY THE TUNER DETENT.
TUNER MOTOR AND GEAR ASSEMBLY
M6 117 V AC MOTOR
K1 OFF-ON-VOL STEP RELAY
S5 FOUR-POSITION CAM-OPERATED SWITCH (PART OF K1)
S5 SWITCH POSITION
CONTACT POSITION
S6 ON-VAC SWITCH
117 V AC 60 CYCLES AC ONLY 195 WATTS
To T501A
To T501B

ADMIRAL REMOTE CONTROL AMPLIFIER CHASSIS 7E2

Schematic Diagram Courtesy of Admiral Corporation



PHILCO MODEL T-74 (Code 124)

Schematic Diagram Courtesy of Philco Corporation